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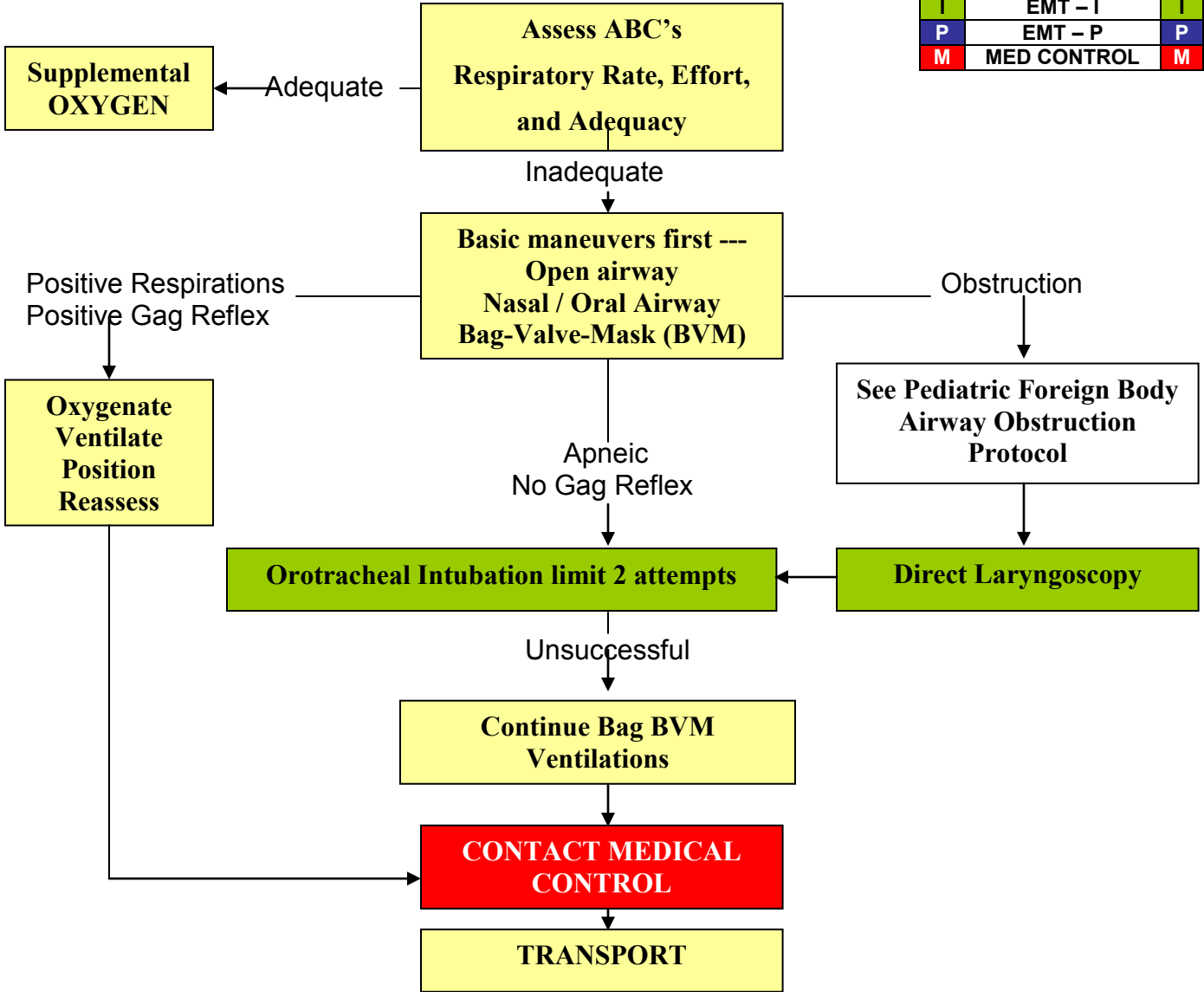
PEDIATRIC**EMERGENCIES IN CHILDREN WITH SPECIAL HEALTHCARE NEEDS****GENERAL CONSIDERATIONS**

1. Treat the ABC's first. Treat the child, not the equipment. If the emergency is due to an equipment malfunction, manage the child appropriately using your own equipment.
2. Children formerly cared for in hospitals or chronic care facilities are often cared for in homes by parents or other caretakers. These children may have self-limiting or chronic diseases. There are multitudes of underlying medical conditions that may categorize children as having special needs. Many are often unstable and may frequently involve the EMS system for evaluation, stabilization, and transport. Special needs children include technology-assisted children such as those with tracheostomy tubes with or without assisted ventilation, children with gastrostomy tubes, and children with indwelling central lines. The most serious complications are related to tracheostomy problems.
3. Children with Special Healthcare Needs (CSHCN) have many allergies. It is important to ask the caregiver, who knows the child best, what allergies the child has. This is particularly important since they may not be accompanying the child on transport. For example, children with spina bifida often have latex allergies. It is important to stock latex free equipment such as; gloves, oxygen masks, IV tubing, BVM, blood pressure cuffs, IV catheters, ect.
4. Knowing which children in a given area have special needs and keeping a logbook is encouraged. Such a book could include; major medical diagnosis, allergies, tracheostomy size, ventilator settings ect.
5. Parents and caretakers are usually trained in emergency management and can be of assistance to EMS personnel. Listen carefully to the caregiver and follow his/her guidance regarding the child's treatment.
6. Children with chronic illnesses often have different physical development from well children. Therefore, their baseline vital signs may differ from normal standards. The size and developmental level may be different from age-based norms and length based tapes used to calculate drug dosages. Ask the caregiver if the child normally has abnormal vital signs (i.e. a fast heart rate or a low pulse oximeter reading).
7. Some CSHCN may have sensory deficits (i.e. they may be hearing impaired or blind) yet may have age-appropriate cognitive abilities. Follow the caregivers' lead in talking to and comforting a child during treatment and transport. Do not assume that a CSHCN is developmentally delayed.
8. When moving a special needs child, a slow careful transfer with two or more people is preferable. Do not try to straighten or unnecessarily manipulate contracted extremities as it may cause injury or pain to the child. Certain medical conditions will require special care. Again, consult the child's caregiver.
9. Caregivers of CSHCN often carry "go bags" or diaper bags that contain supplies to use with the child's medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. Before leaving the scene, ask the caregivers if they have a "go bag" and carry it with you.
10. Caregivers may also carry a brief medical information form or card. The child may be enrolled in a medical alert program whereby emergency personnel can get quick access to the child's medical history. Ask the caregivers if they have an emergency information form or some other form of medical information for their child.
11. Caregivers of CSHCN often prefer that their child be transported to the hospital where the child is regularly followed or the "home" hospital. When making the decision as to where to transport a CSHCN, take into account: local protocols, the child's condition, capabilities of the local hospital, caregivers' request, ability to transport to certain locations.

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AIRWAY / BREATHING
PEDIATRIC
AIRWAY

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

AIRWAY

KEY POINTS

- Capnometry is mandatory with all methods of intubation. Document results of SpO₂.
- Limit intubation attempts to 2 per patient.
- If unable to intubate, continue BVM ventilations, transport rapidly, and **notify receiving hospital early**
- Maintain C-spine immobilization for patients with suspected spinal injury.
- Do not assume hyperventilation is psychogenic -- use oxygen, not a paper bag.
- Sellick's maneuver (Cricoid Pressure) should be used to assist with difficult intubations.
- Continuous pulse oximetry should be utilized in all patients with an inadequate respiratory function.
- Consider c-collar to help maintain ETT placement for all intubated patients .

AIRWAY / BREATHING
PEDIATRIC
FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

Infant (0 – 12 months)

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M

Head Tilt / Chin Lift/ Jaw Thrust / Airway Maneuvers

Coughing
Conscious

Encourage patient to cough

OXYGEN
10 – 15 L Pediatric Mask,
as tolerated

Complete Obstruction
Conscious

5 Back Blows / 5 Chest Thrusts

Complete Obstruction
Unconscious

Visualize
Finger Sweep
(Only if visualized / attainable)

Consider use of
Laryngoscope/ Magill Forceps

Open airway / ventilate
(May reposition repeat)

Start CPR Check for Object Prior
to Ventilation Attempts

Child (1 – 8 years)

Head Tilt / Chin Lift/ Jaw Thrust / Airway Maneuvers

Coughing
Conscious

Encourage patient to cough

OXYGEN
10 – 15 L Pediatric Mask,
as tolerated

Complete Obstruction
Conscious

Abdominal Thrusts

Complete Obstruction
Unconscious

Visualize
Finger Sweep
(Only if visualized / attainable)

Consider use of
Laryngoscope/ Magill Forceps

Open airway / ventilate
(May reposition repeat)

CONTACT MEDICAL

TRANSPORT

If unable to ventilate,
Consider Needle
Cricothyrotomy

AIRWAY / BREATHING

PEDIATRIC

FOREIGN BODY AIRWAY OBSTRUCTION (FBAO)

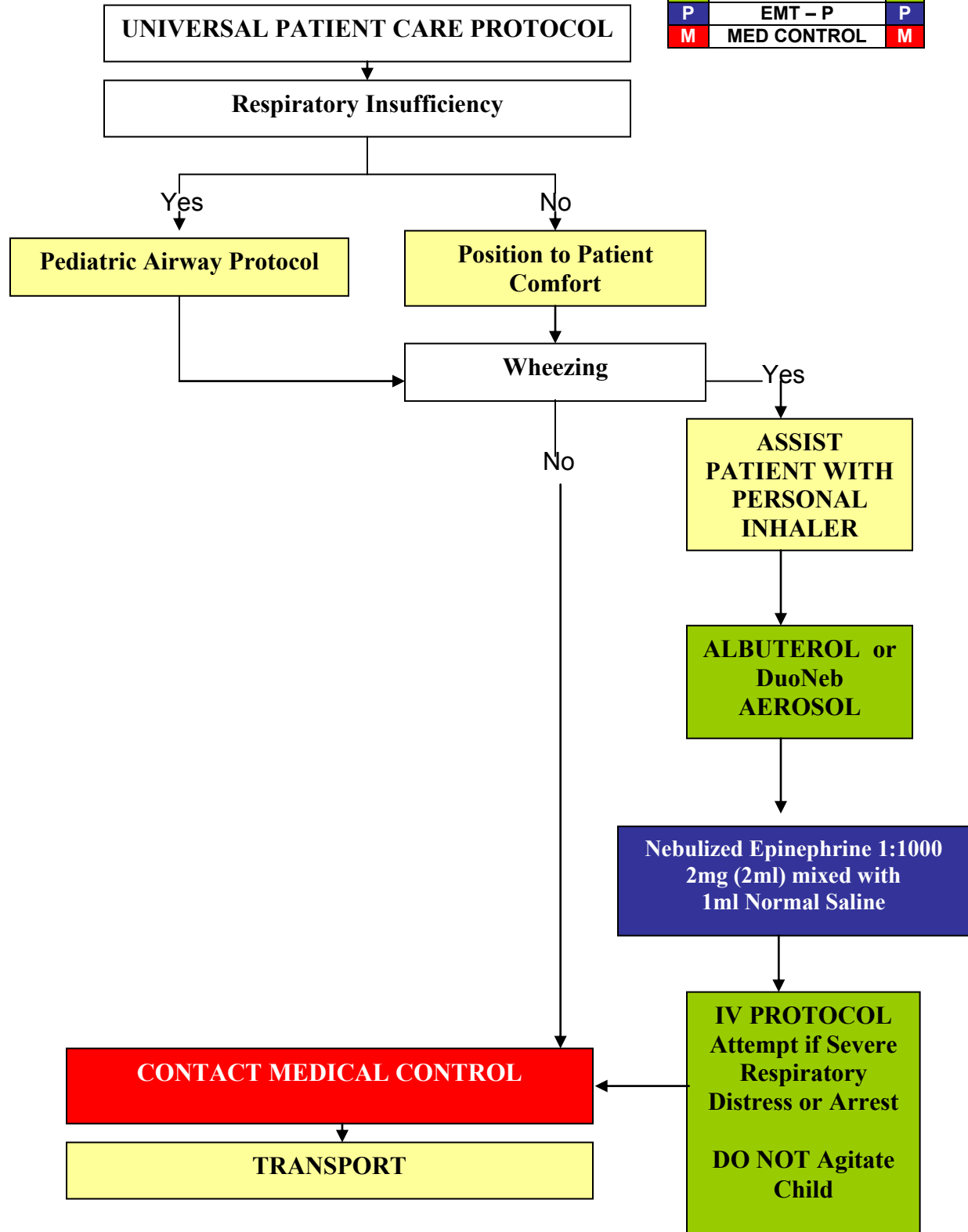
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none">• Coughing• Choking• Inability to speak• Unresponsive	<ul style="list-style-type: none">• Witnessed aspiration• Sudden episode of choking• Audible stridor• Change in skin color• Decreased LOC• Increased / Decreased respiratory rate• Labored breathing• Unproductive cough	<ul style="list-style-type: none">• Cardiac Arrest• Respiratory Arrest• Anaphylaxis

KEY POINTS

- Infants 0-12 months DO NOT receive abdominal thrusts. Use chest thrusts.
- NEVER perform blind finger sweeps in infants or children.
- Attempt to clear the airway should only be made if foreign body aspiration is witnessed or very strongly suspected and there is complete airway obstruction.
- Even with a complete airway obstruction, positive-pressure ventilation is often successful.
- Keep child and parent (or caregiver) CALM. Do not agitate child.

AIRWAY/BREATHING
PEDIATRIC
RESPIRATORY DISTRESS LOWER AIRWAY

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

RESPIRATORY DISTRESS - LOWER AIRWAY

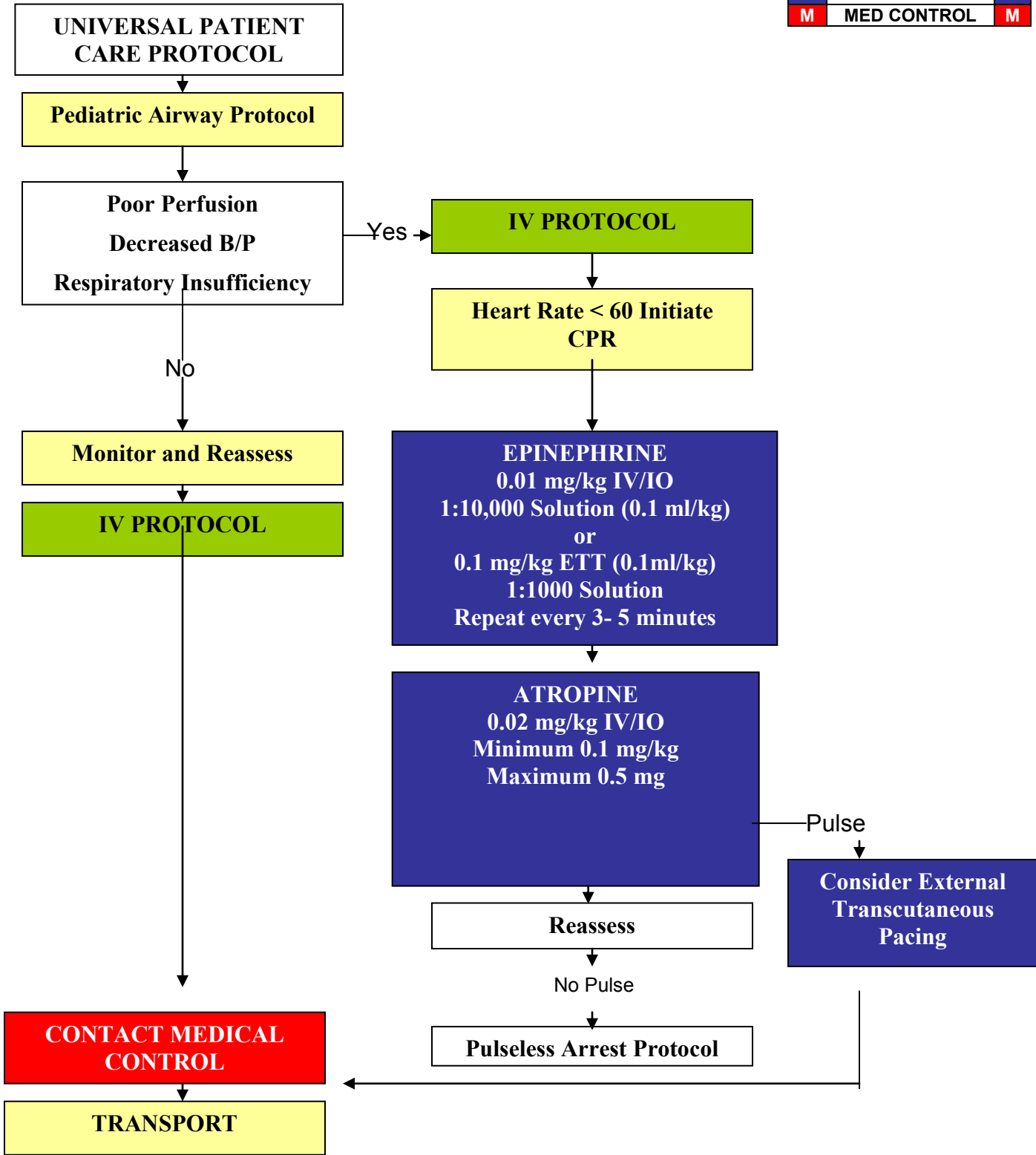
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL
<ul style="list-style-type: none"> • Time of onset • Possibility of foreign body • Medical history • Medications • Fever or respiratory infection • Other sick siblings • History of trauma 	<ul style="list-style-type: none"> • Wheezing or stridor • Respiratory retractions • Increased heart rate • Altered level of consciousness • Anxious appearance 	<ul style="list-style-type: none"> • Asthma • Aspiration • Foreign body • Infection • Pneumonia • Croup • Epiglottitis • Congenital heart disease • Medication or toxin • Trauma

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Neck, Heart, Lungs, Abdomen, Extremities, Neuro
- Do not force a child into a position. They will protect their airway by their body position.
- The most important component of respiratory distress is airway control.
- DO NOT attempt invasive airway procedures unless the patient is in respiratory arrest.
- For some patients in severe respiratory distress, wheezing may not be heard. Consider Albuterol for the known asthmatic in severe respiratory distress.
- Stridor, gagging or choking in the breathing patient with respiratory distress may indicate upper airway obstruction.
- Wheezing in the breathing patient with respiratory distress indicates lower airway disease, which may come from a variety of causes. The patient with severe lower airway disease may have altered LOC, be unable to talk, may have absent or markedly decreased breath sounds and severe retractions with accessory muscle use.
- If the patient has signs of respiratory failure, begin to assist ventilations with BVM, even when they are breathing.
- Contact Medical Control for patients with a cardiac history.

ARRYTHMIAS / PALS
PEDIATRIC
SINUS BRADYCARDIA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

SINUS BRADYCARDIA

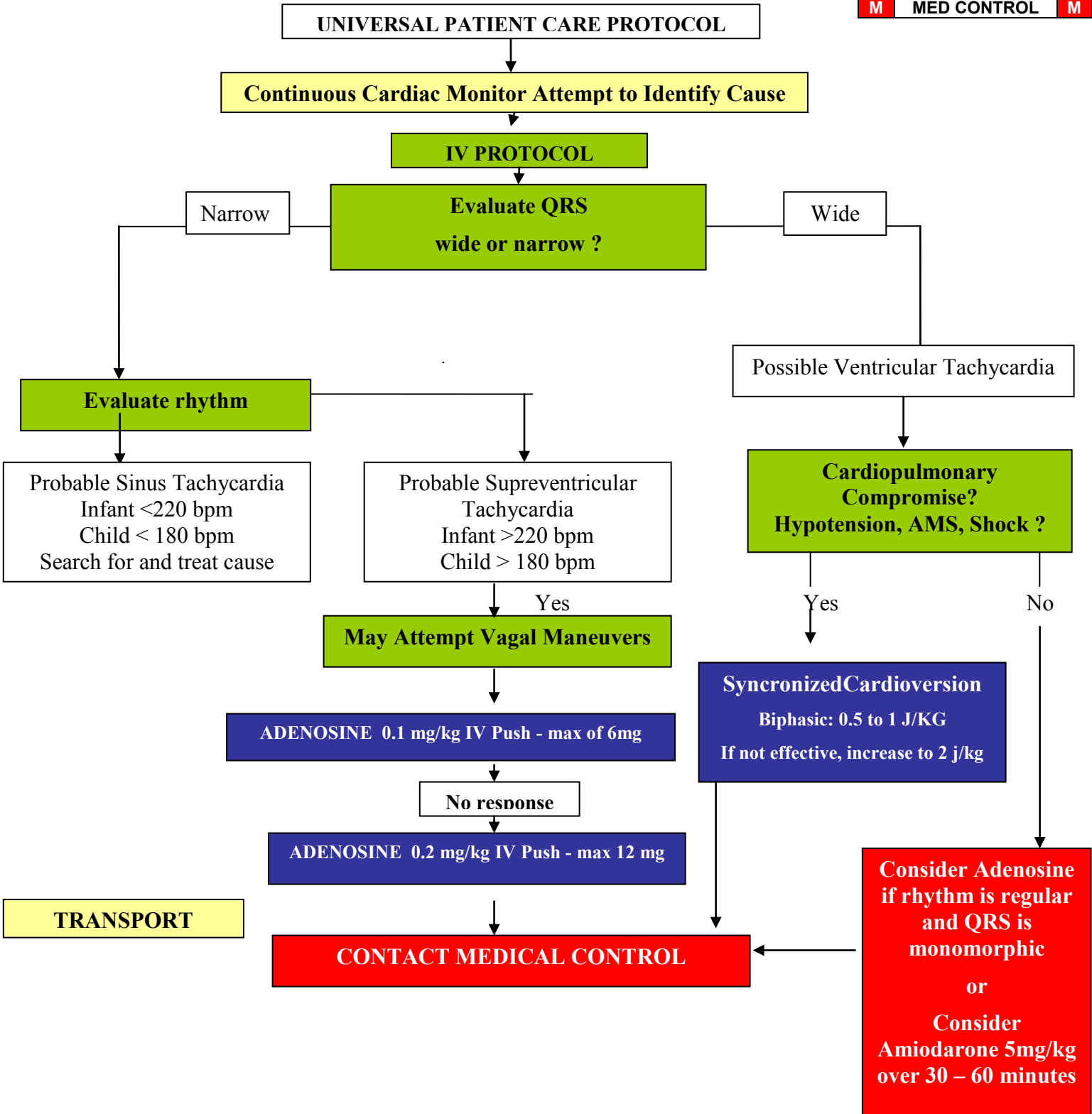
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Past medical history • Foreign body exposure • Respiratory distress or arrest • Apnea • Possible toxin or poison exposure • Congenital disease • Medication (maternal or infant) 	<ul style="list-style-type: none"> • Hypoxia • Decreased heart rate • Delayed capillary refill or cyanosis • Mottled, cool skin • Hypotension or arrest • Altered level of consciousness • Poor perfusion • Shock • Short of breath • Pulmonary fluid 	<ul style="list-style-type: none"> • Respiratory effort • Respiratory obstruction • Foreign body / secretions • Croup / epiglottitis • Hypovolemia • Hypothermia • Infection / sepsis • Medication or toxin • Hypoglycemia • Trauma

KEY POINTS

- Exam: Mental Status, HEENT, Skin, Heart, Lungs, Abdomen, Back, Extremities, Neuro.
- Heart Rate < 100 (Neonates)
- Heart Rate < 80 (Infants)
- Heart Rate <60 (Children > 2 years)
- In older children who may be athletes a Heart Rate <60 may be normal (Are they Symptomatic?)
- Infant = < 1 year of age
- Most maternal medications pass through breast milk to the infant.
- The majority of pediatric arrests are due to airway problems.
- Hypoglycemia, severe dehydration and narcotic effects may produce bradycardia.
- Pediatric patients requiring external transcutaneous pacing require the use of pads appropriate for pediatric patients per the manufacturers guidelines.
- Identify and treat possible causes for pediatric bradycardia:
 - Hypoxia
 - Hypothermia
 - Head injury
 - Heart block
 - Toxic ingestion/exposure
- Refer to Broselow Pediatric Tape when unsure about patient weight, age and/or drug dosage.
- The minimum dose of Atropine that should be administered to a pediatric patient is 0.1 mg/kg.
- The maximum single dose of Atropine is 0.5mg in a child and 1 mg in an adolescent.
- If the rhythm changes, follow the appropriate protocol.

ARRYTHMIAS / PALS
PEDIATRIC
TACHYCARDIA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



ARRYTHMIAS / PALS

**PEDIATRIC
TACHYCARDIA**

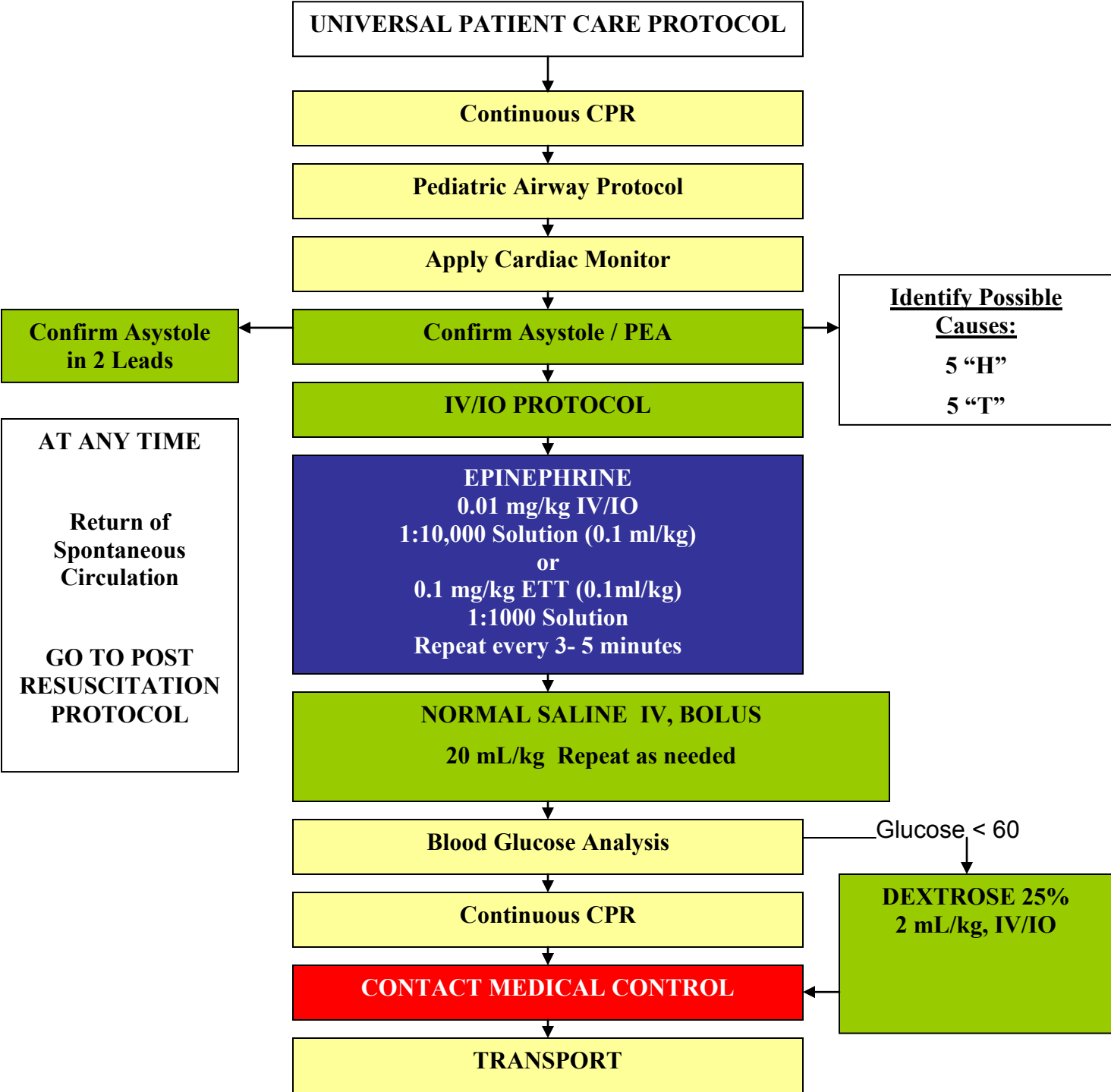
HISTORY	SIGNS AND SYMPTOMS	<i>DIFFERENTIAL DIAGNOSIS</i>
<ul style="list-style-type: none"> • Past medical history • Medications or toxic ingestion (Aminophylline, diet pills, thyroid supplements, decongestants, Digoxin) • Drugs (nicotine, cocaine) • Congenital Heart Disease • Respiratory Distress • Syncope or Near-Syncope 	<ul style="list-style-type: none"> • HR: Child > 180/bpm Infant > 220/bpm • Pale or Cyanosis • Diaphoresis • Tachypnea • Vomiting • Hypotension • Altered level of consciousness • Pulmonary congestion • Syncope 	<ul style="list-style-type: none"> • Heart disease (congenital) • Hypo / Hyperthermia • Hypovolemia or anemia • Electrolyte imbalance • Anxiety / Pain / Emotional stress • Fever / Infection / Sepsis • Hypoxia • Hypoglycemia • Medication / Toxin / Drugs • Pulmonary embolus • Trauma • Tension pneumothorax

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro.
- Carefully evaluate the rhythm to distinguish Sinus Tachycardia, Supraventricular Tachycardia, and Ventricular Tachycardia
- Separating the child from the caregiver may worsen the child's clinical condition.
- Pediatric paddles should be used in children < 10 kg or Broselow Tape color purple
- Monitor for respiratory depression and hypotension associated if Diazepam is used.
- Continuous pulse oximetry is required for all patients if available.
- Document all rhythm changes with monitor strips and obtain monitor strips with each therapeutic intervention.
- Possible causes of tachycardia: hypoxia, hypovolemia, fear, and pain.
- A complete medical history must be obtained.
- Do not delay cardioversion to gain vascular access for the unstable patient.
- If you are unable to get the monitor to select low enough joules, then rapid transport to the nearest appropriate facility is indicated.
- If the patient is stable, do not cardiovert.
- Record EKG strips during Adenosine administration.
- Perform a 12-Lead EKG prior to and after Adenosine conversion or cardioversion of SVT.
- If the rhythm changes, follow the appropriate protocol.

CARDIAC ARREST / PALS
PEDIATRIC
ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



CARDIAC ARREST / PALS**PEDIATRIC****ASYSTOLE / PULSELESS ELECTRICAL ACTIVITY (PEA)**

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Time of arrest • Medical history • Medications • Possibility of foreign body • Hypothermia 	<ul style="list-style-type: none"> • Pulseless • Apneic or agonal respirations • Cyanosis 	<ul style="list-style-type: none"> • Ventricular Fibrillation • Pulseless Ventricular Tachycardia

CONSIDER TREATABLE CAUSES

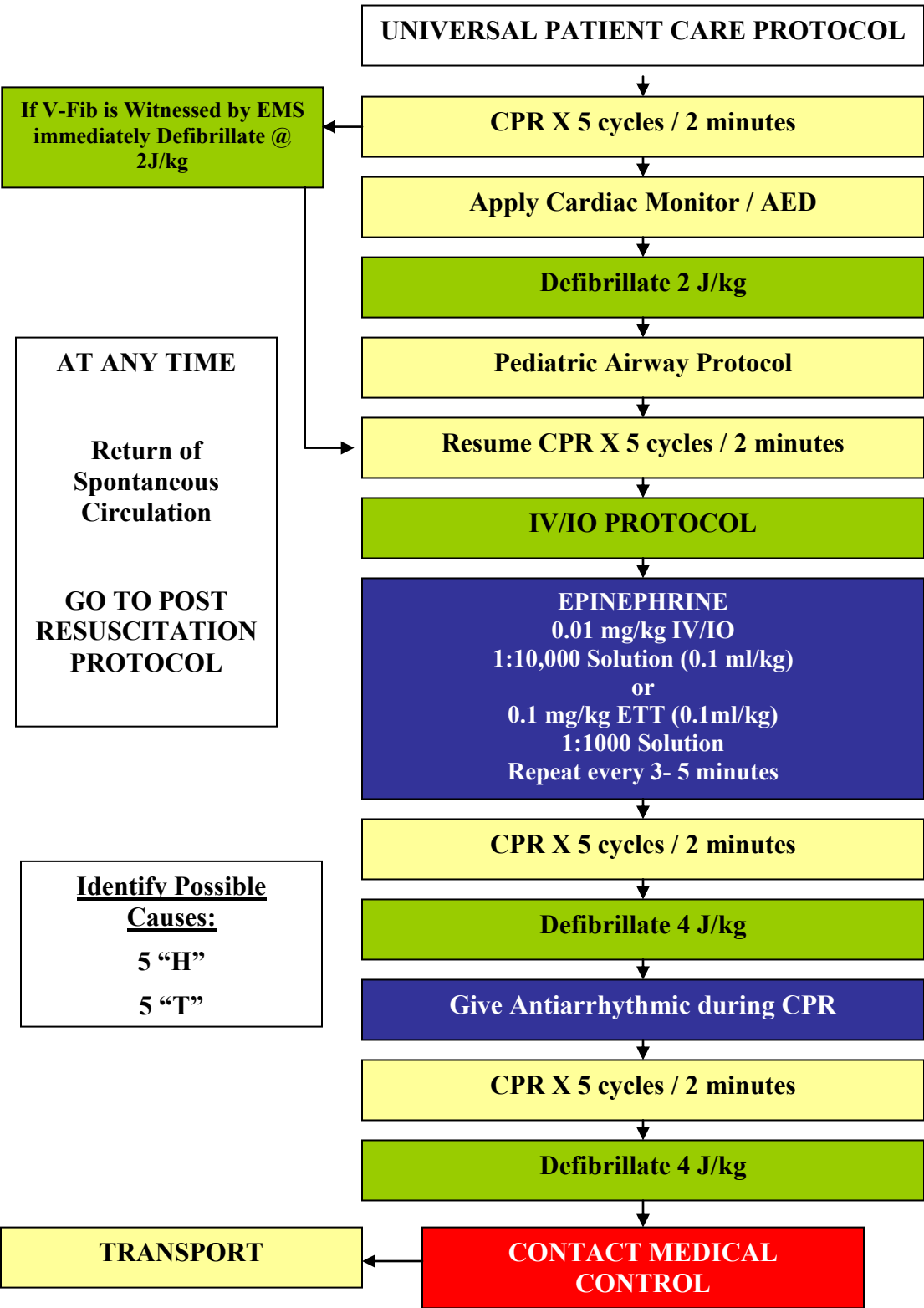
<ul style="list-style-type: none"> • Hypovolemia • Tension Pneumothorax • Myocardial Infarction • Drug Overdose • Hypothermia • Acidosis 	<ul style="list-style-type: none"> • Cardiac Tamponade • Pulmonary Embolism • Tricyclic Overdose • Hypoxia • Hypoglycemia • Hyperkalemia
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KEY POINTS

<ul style="list-style-type: none"> • Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro. • Always confirm asystole in more than one lead. • Cardiac arrest in children is primarily due to lack of an adequate airway, resulting in hypoxia • If the patient converts to another rhythm or has a return of circulation, refer to the appropriate protocol and treat accordingly. • When assessing for a pulse palpate the brachial or femoral arteries for infants and the carotid or femoral artery for children. • Continue BLS procedures throughout the resuscitation. • If the patient is intubated, be sure to routinely reassess tube placement. • If the patient has an IO, routinely reassess for patency. • When there is an established ETT, DO NOT delay administration of medications for IV/IO attempts. Administer the appropriate medications down the tube.
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CARDIAC ARREST / PALS
PEDIATRIC
VENTRICULAR FIBRILLATION (V-FIB)
PULSELESS VENTRICULAR TACHYCARDIA (V-TACH)

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



AMIODARONE
5 mg/kg IV/IO Push
May repeat once

CARDIAC ARREST / PALS**PEDIATRIC****VENTRICULAR FIBRILLATION (V-FIB)
PULSELESS VENTRICULAR TACHYCARDIA**

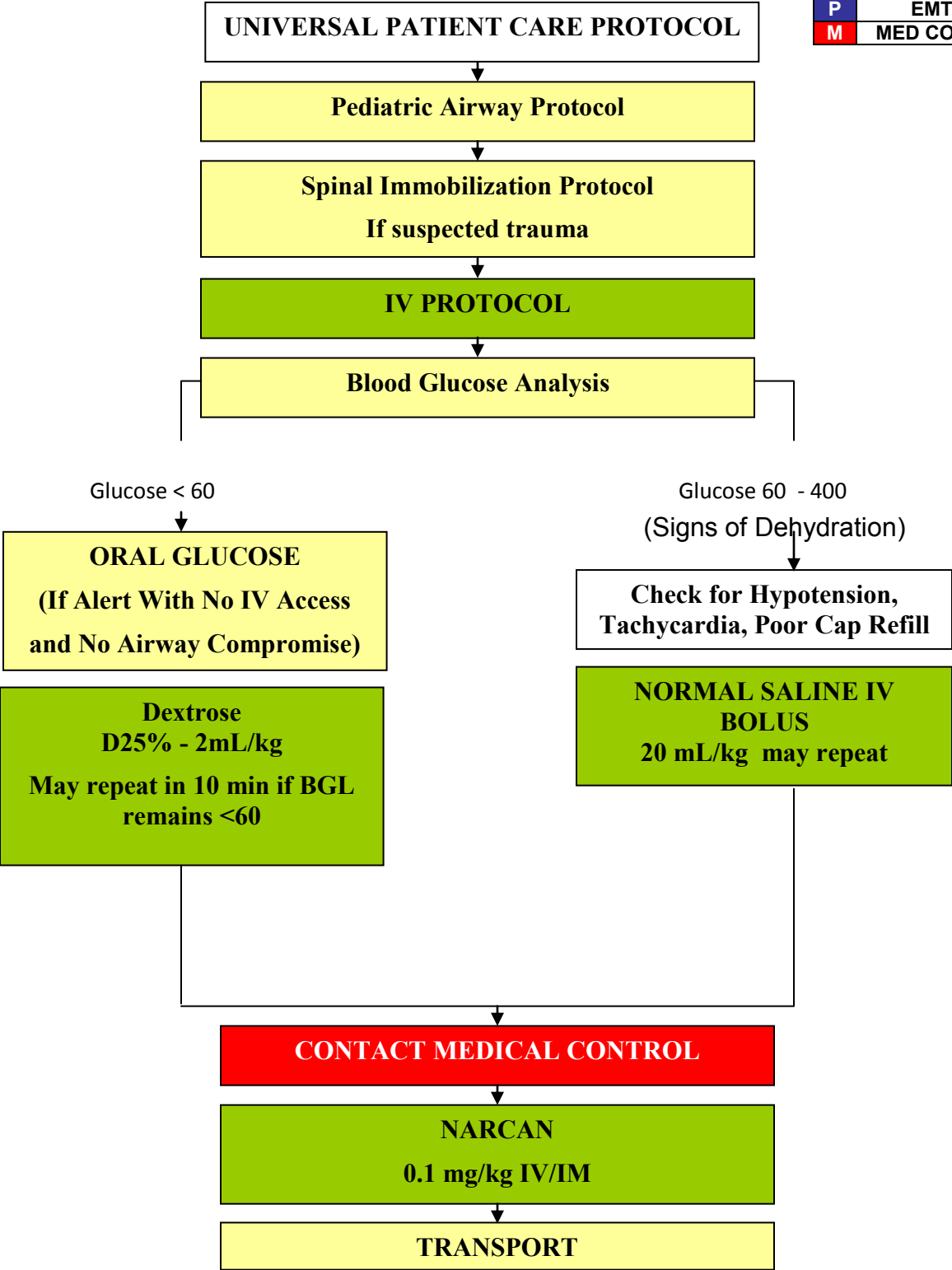
HISTORY	SIGNS AND SYMPTOMS	<i>DIFFERENTIAL DIAGNOSIS</i>
<ul style="list-style-type: none"> • Time of arrest • Medical history • Medications • Possibility of foreign body • Hypothermia 	<ul style="list-style-type: none"> • Unresponsive • Cardiac arrest 	<ul style="list-style-type: none"> • Respiratory failure • Foreign body • Secretions • Infection (croup, epiglottitis) • Hypovolemia (dehydration) • Congenital heart disease • Trauma • Tension pneumothorax • Hypothermia • Toxin or medication • Hypoglycemia • Acidosis

KEY POINTS

- Exam: Mental Status, Skin, Neck, Lung, Heart, Abdomen, Back, Extremities, Neuro.
- Monophasic and Biphasic waveform defibrillators should use the same energy levels noted.
- In order to be successful in pediatric arrests, a cause must be identified and corrected.
- Airway is the most important intervention. This should be accomplished immediately. Patient survival is often dependent on airway management success. You should only attempt intubation once.
- If the patient converts to another rhythm, follow the appropriate protocol and treat accordingly.
- If the patient converts back to ventricular fibrillation or pulseless ventricular tachycardia, defibrillate at the previously used setting.
- Defibrillation is the definitive therapy for ventricular fibrillation and pulseless ventricular tachycardia.
- Do not delay transport for IV/IO access.

MEDICAL PROTOCOLS
PEDIATRIC
ALTERED LEVEL OF CONSCIOUSNESS

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

ALTERED LEVEL OF CONSCIOUSNESS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Known diabetic, medic alert tag • Drugs, drug paraphernalia • Report of illicit drug use or toxic ingestion • Past medical history • Medications • History of trauma 	<ul style="list-style-type: none"> • Unresponsive • Decreased Responsiveness • Inadequate Respirations • Confusion • Agitation • Decreased mental status • Change in baseline mental status • Hypoglycemia (cool, diaphoretic skin) 	<ul style="list-style-type: none"> • Head trauma • CNS (stroke, tumor, seizure, infection) • Infection • Shock (septic, metabolic, traumatic) • Diabetes (hyper / hypoglycemia) • Toxicologic • Acidosis / Alkalosis • Environmental exposure • Pulmonary (Hypoxia) • Electrolyte abnormality • Psychiatric disorder

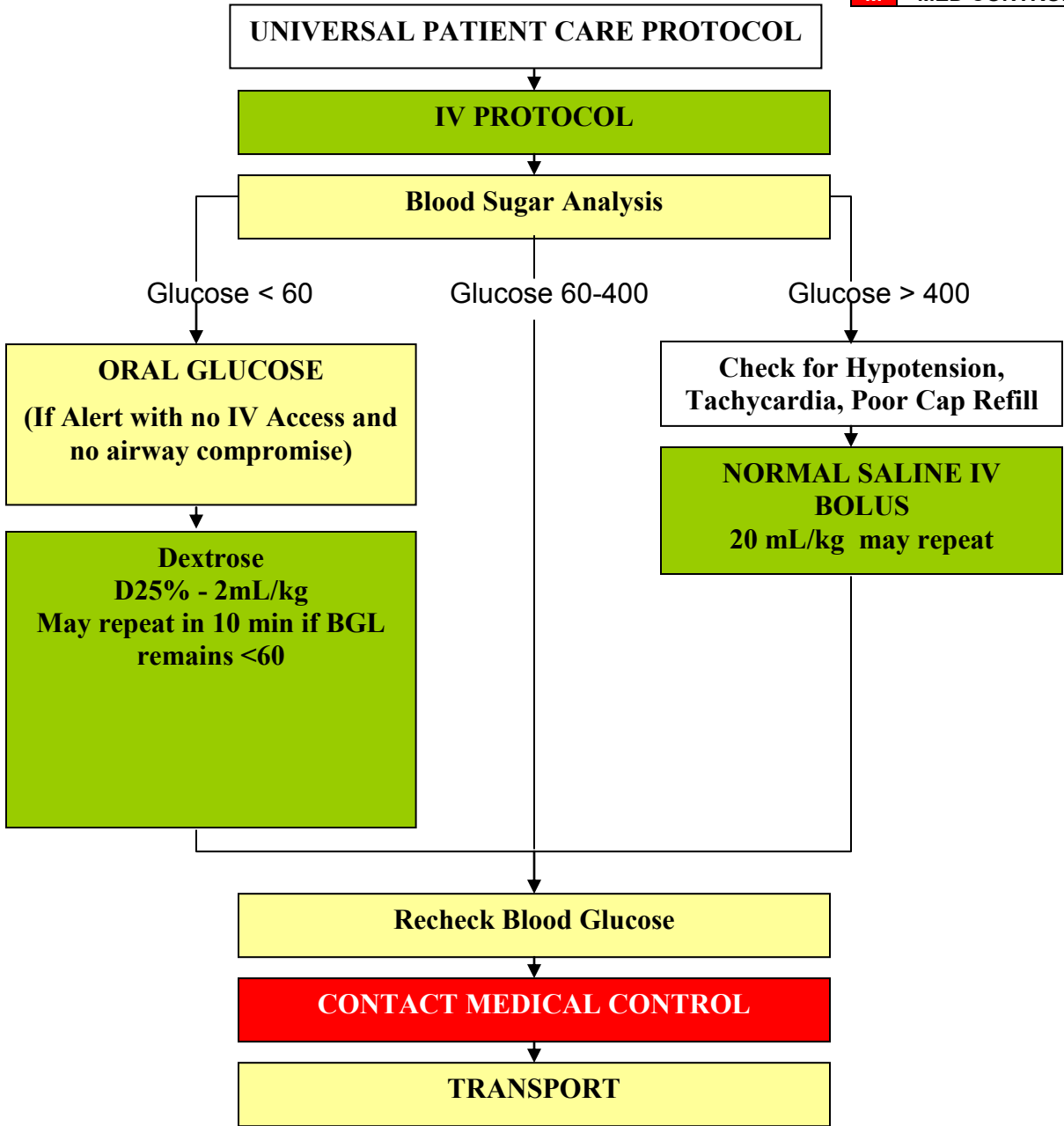
KEY POINTS

- Protect the patient's airway and support ABCs.
- Document the patient's initial Glasgow Coma Score.
- Naloxone (Narcan) administration may cause acute opiate withdrawal, which includes vomiting, agitation, or combative behavior. Be prepared for the possibility of combative behavior to ensure crew safety.
- Naloxone (Narcan) may wear off in as little as 20 minutes causing the patient to become more sedate and possibly hypoventilate. All patients receiving Naloxone (Narcan) MUST be transported.

ONLY A FEW CAUSES CAN BE TREATED IN THE FIELD. CARE SHOULD FOCUS ON MAINTAINING AIRWAY AND RAPID TRANSPORT

MEDICAL PROTOCOLS
PEDIATRIC
 DIABETIC EMERGENCIES

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

DIABETIC EMERGENCIES

HYPOGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Known diabetic, medic alert tag • Past medical history • Medications • Recent Blood Sugar Analysis 	<ul style="list-style-type: none"> • Altered level of consciousness • Dizziness • Irritability • Diaphoresis • Convulsions • Hunger • Confusion 	<ul style="list-style-type: none"> • ETOH • Toxic overdose • Trauma • Seizure • Syncope • CNS disorder • Stroke • Tumor • Pre-existing condition

HYPERGLYCEMIA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Known diabetic, medic alert tag • Past medical history • Medications • Recent Blood Sugar Analysis 	<ul style="list-style-type: none"> • Altered level of consciousness / coma • Abdominal pain • Nausea / Vomiting • Dehydration • Frequent thirst • Frequent urination • General weakness • Malaise • Hypovolemic shock • Hyperventilation • Deep / Rapid respirations 	<ul style="list-style-type: none"> • ETOH • Toxic overdose • Trauma • Seizure • Syncope • CNS disorder • Stroke • Diabetic Ketoacidosis

KEY POINTS

Hyperglycemia:

- Diabetic Ketoacidosis (DKA) is a complication of Diabetes Mellitus. It can occur when insulin levels become inadequate to meet the metabolic demands of the body for a prolonged amount of time (onset can be within 12-24 hours). Without enough insulin, the blood glucose increases and cellular glucose depletes. The body removes excess blood glucose by dumping it into the urine. Pediatric patients in DKA should be treated as hyperglycemic under the Pediatric Diabetic Emergency Protocol.
- Patients can have hyperglycemia without having DKA.

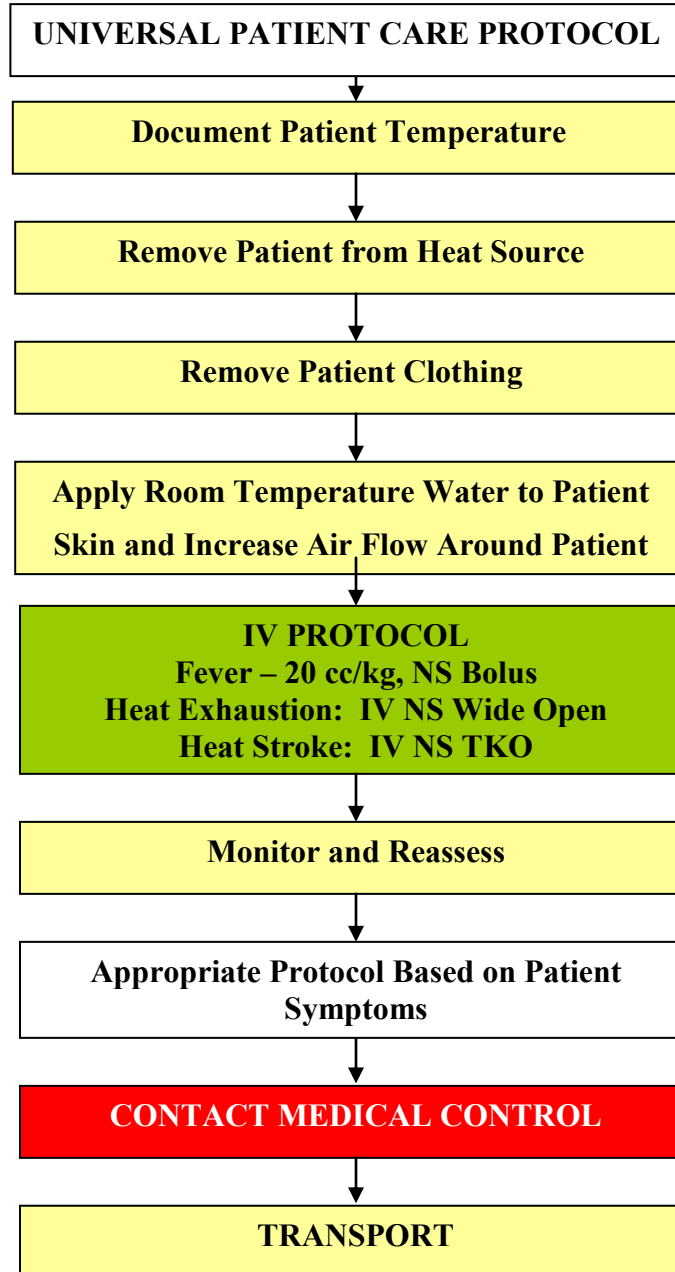
Hypoglycemia:

- Always suspect hypoglycemia in patients with an altered mental status.
- If a blood glucose analysis is not available, a patient with altered mental status and signs and symptoms consistent with hypoglycemia should receive Dextrose or Glucagon.
 - Dextrose is used to elevate BGL but it will not maintain it. The patient will need to follow up with a meal if not transported to a hospital.
- If the patient is alert and has the ability to swallow, consider administering oral glucose, have patient drink orange juice with sugar or a sugar – containing beverage, or have the patient eat a candy bar or meal.
- Check the patient's BGL after the administration of Dextrose or after any attempt to raise the patient's BGL.

PEDIATRIC

HEAT ILLNESS

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC HEAT ILLNESS

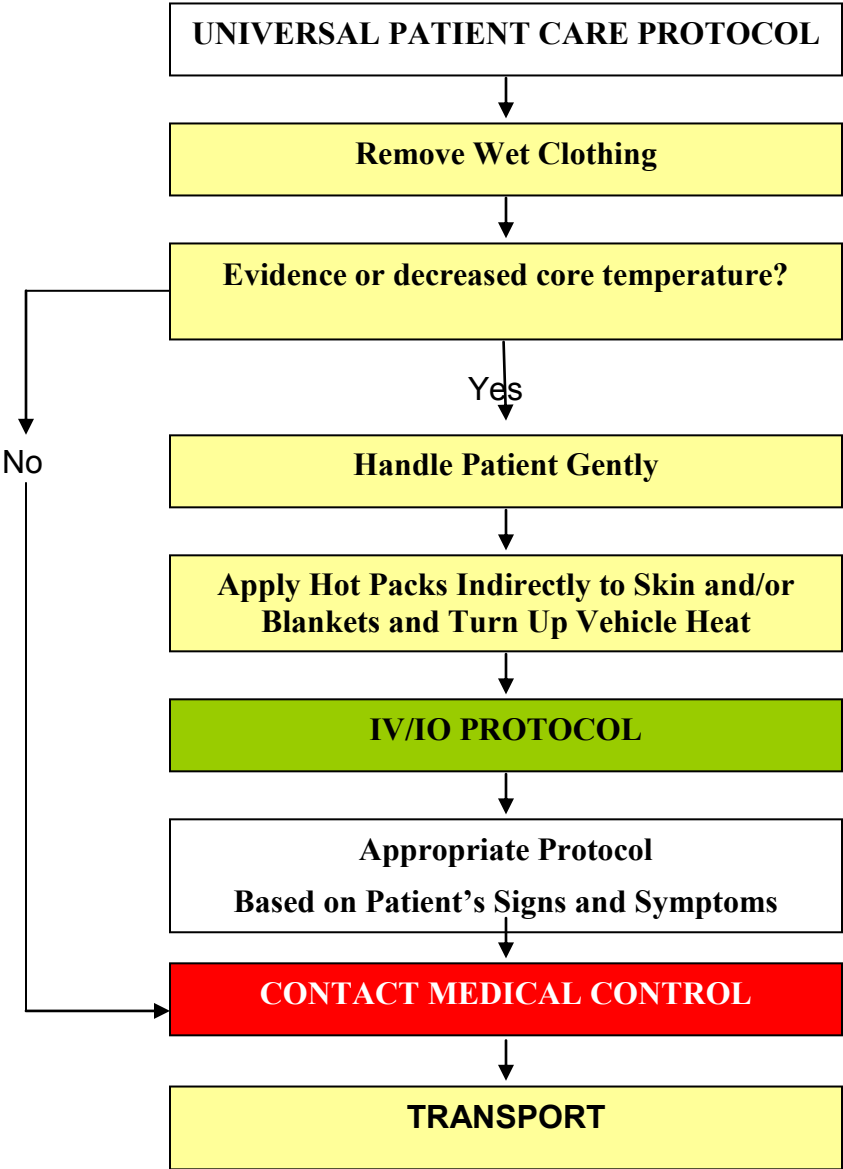
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Age • Exposure to increased temperatures and humidity • Past medical history/medications • Extreme exertion • Time and length of exposure • Poor PO intake • Fatigue and/or muscle cramping 	<ul style="list-style-type: none"> • Altered mental status or unconsciousness • Hot, dry or sweaty skin • Hypotension or shock • Seizures • Nausea 	<ul style="list-style-type: none"> • Fever (infection) • Dehydration • Medications • Hyperthyroidism • Delirium tremens • Heat cramps • Heat exhaustion • Heat stroke • CNS lesions or tumors

Heat Exhaustion: Dehydration	Heat Stroke: Cerebral Edema
<ul style="list-style-type: none"> • Muscular/abdominal cramping • General weakness • Diaphoresis • Febrile • Confusion • Dry mouth/thirsty • Tachycardia • BP normal or orthostatic 	<ul style="list-style-type: none"> • Confusion • Bizarre behavior • Skin hot, dry, febrile • Tachycardia • Hypotensive • Seizure • Coma

KEY POINTS
<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Heart, Lungs, Neuro. • Extremes of age are more prone to heat emergencies (i.e. young and old). • Patients at risk for heat emergencies include neonates, infants, geriatric patients, and patients with mental illness. Other contributory factors may include heart medications, diuretics, cold medications and/or psychiatric medications. • Predisposed by use of: tricyclic antidepressants, phenothiazines, anticholinergic medications, and alcohol. • Cocaine, Amphetamines, and Salicylates may elevate body temperatures. • Sweating generally disappears as body temperature rises above 104 °F (40 °C). • Intensive shivering may occur as patient is cooled. • Heat cramps consists of benign muscle cramping 2nd to dehydration and is not associated with an elevated temperature. • Heat exhaustion consists of dehydration, salt depletion, dizziness, fever, mental status changes, headache, cramping, nausea and vomiting. Vital signs usually consist of tachycardia, and an elevated temperature. • Heat stroke consists of dehydration, tachycardia, hypotension, temperature >104 °F (40 °C), and altered mental status. • Heat exposure can occur either due to increased environmental temperatures or prolonged exercise or a combination of both. Environments with temperature >90 °F and humidity >60% present the most risk. • Heat stroke occurs when the cooling mechanism of the body (sweating) ceases due to temperature overload and/or electrolyte imbalances. Be alert for cardiac dysrhythmias for the patient with heat stroke.

MEDICAL EMERGENCIES
PEDIATRIC
HYPOTHERMIA / FROSTBITE

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MEDCONTROL	M



PEDIATRIC

HYPOTHERMIA/FROSTBITE

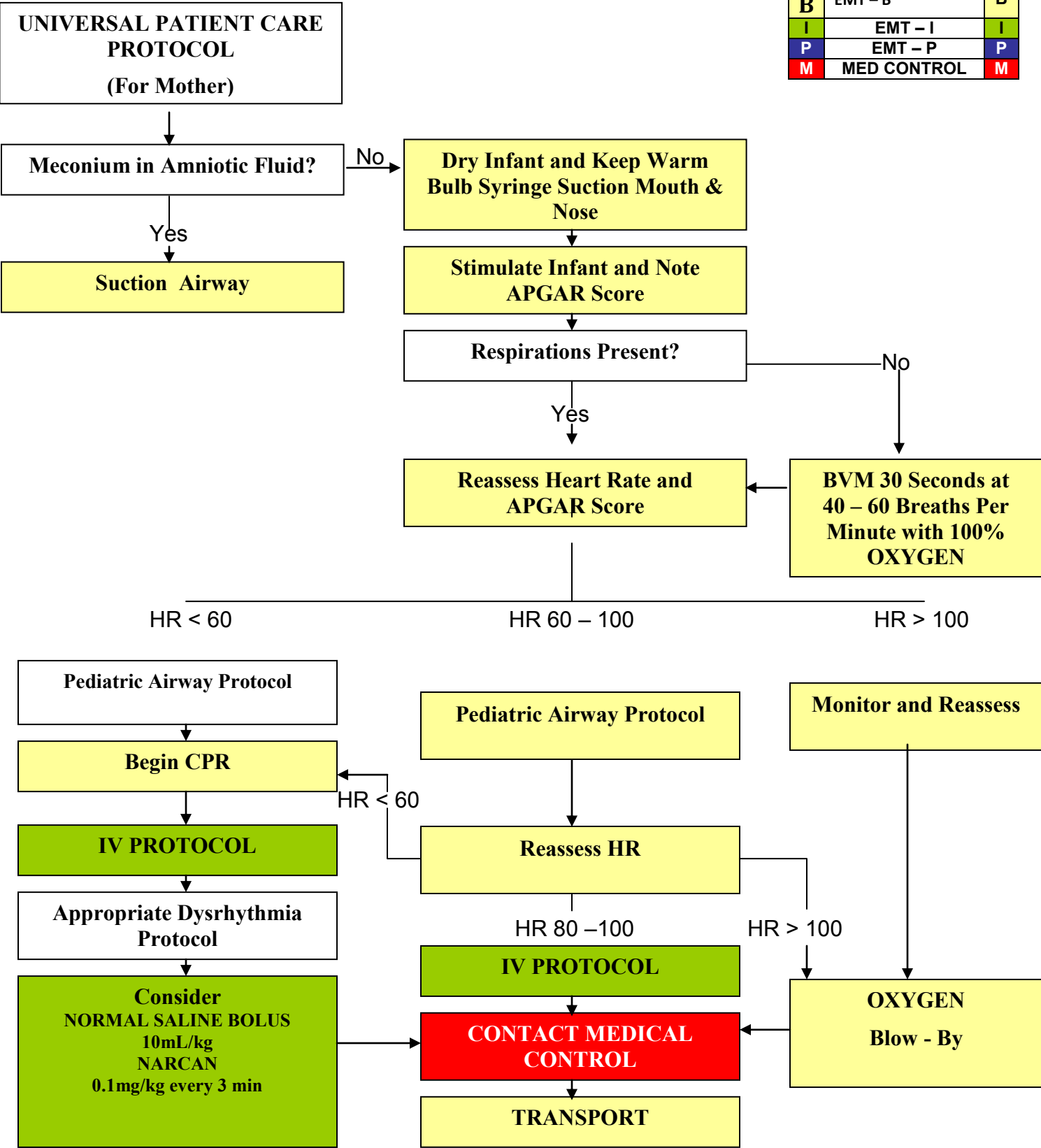
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Past medical history • Medications • Exposure to environment even in normal temperatures • Exposure to extreme cold • Extremes of age • Drug use: alcohol, barbiturates • Infection / Sepsis • Length of exposure / Wetness 	<ul style="list-style-type: none"> • Cold, clammy • Shivering • Mental status changes • Extremity pain or sensory abnormality • Bradycardia • Hypotension or shock 	<ul style="list-style-type: none"> • Sepsis • Environmental exposure • Hypoglycemia • CNS dysfunction • Stroke • Head injury • Spinal cord injury

KEY POINTS

- Exam: Mental Status, Heart, Lungs, Abdomen, Extremities, Neuro.
- Hypothermic/drowning/near drowning patients that appear cold and dead are NOT dead until they are warm and dead, or have other signs of obvious death (putrification, traumatic injury unsustainable to life). All hypothermic patients should have resuscitation performed until care is transferred.
- Defined as core temperature < 35° C (95° F).
- Extremes of age are more susceptible (i.e. young and old).
- Patients with low core temperatures will not respond to ALS drug interventions. Maintain warming procedure and supportive care. Warming procedures includes removing wet clothing, limiting exposure, and covering the patient with warm blankets if available.
- Do not allow patients with frozen extremities to ambulate.
- Superficial frostbite can be treated by using the patient's own body heat.
- Do not attempt to rewarm deep frostbite unless there is an extreme delay in transport, and there is no risk that the affected body part will be refrozen. Contact Medical Control prior to rewarming a deep frostbite injury.
- If the temperature is unable to be measured, treat the patient based on the suspected temperature.
- Hypothermia may produce severe bradycardia.
- Shivering stops below 32° C (90° F).
- Hot packs can be activated and placed in the armpit and groin area if available. Care should be taken not to place the packs directly against the patient's skin.
- Consider withholding CPR if patient has organized rhythm. Discuss with Medical Control.
- The most common mechanism of death in hypothermia is ventricular fibrillation. If the hypothermia victim is in ventricular fibrillation, CPR should be initiated. If V fib is not present, then all treatment and transport decisions should be tempered by the fact that V fib can be caused by rough handling, noxious stimuli or even minor mechanical disturbances, this means that respiratory support with 100% oxygen should be done gently, including intubation, avoiding hyperventilation.

MEDICAL PROTOCOLS
PEDIATRIC
NEONATAL RESUSCITATION

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

NEONATAL RESUSCITATION

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Due date and gestational age • Multiple gestation (twins etc.) • Meconium • Delivery difficulties • Congenital disease • Medications (maternal) • Maternal risk factors substance abuse smoking 	<ul style="list-style-type: none"> • Respiratory distress • Peripheral cyanosis or mottling (normal) • Central cyanosis (abnormal) • Altered level of responsiveness • Bradycardia 	<ul style="list-style-type: none"> • Airway failure • Secretions • Respiratory drive • Infection • Maternal medication effect • Hypovolemia • Hypoglycemia • Congenital heart disease • Hypothermia

KEY POINTS

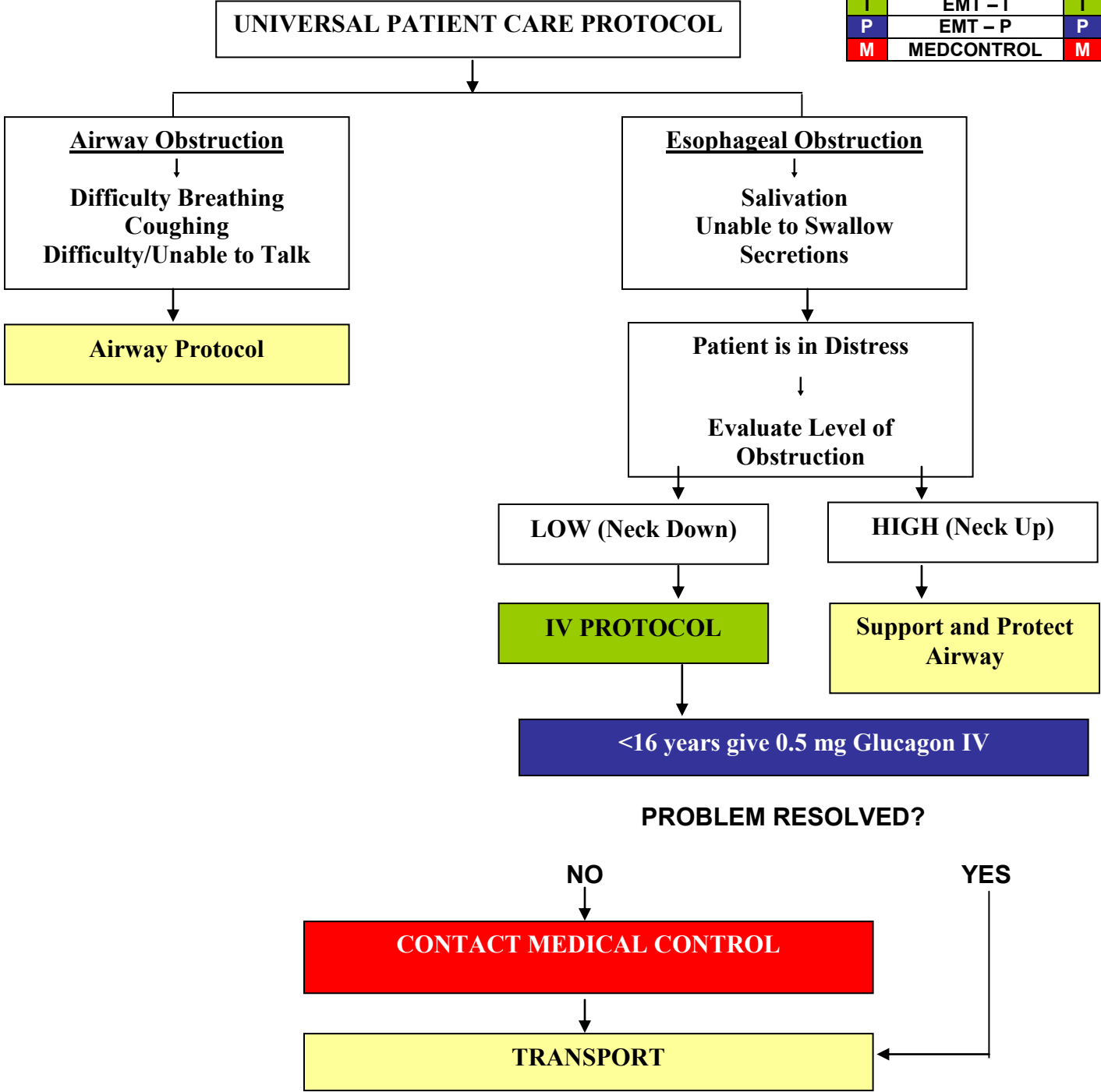
<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Neck, Chest, Heart, Abdomen, Extremities, Neuro. • Maternal sedation or narcotics will sedate infant (Naloxone effective). • Consider hypoglycemia in infant. • Document 1 and 5 minute APGAR scores (see Appendix) • If the patient is in distress, consider hypovolemia. Administer a 10 mL/kg fluid bolus of normal saline. • If the BGL is less than 40 mg/dl go to the Pediatric Diabetic Protocol. • Hypothermia is a common complication of home and field deliveries. Keep the baby warm and dry. • If there is a history of recent maternal narcotic use, consider Naloxone (Narcan) 0.1 mg/kg every 3 minutes until patient responds. • Meconium may need to be suctioned several times to clear the airway. It may also be necessary to visualize the trachea and suction the lower airway. Lower airway suction is achieved by intubating the infant and suctioning directly through the ET tube. Each time his suctioning is done, the infant will have to be reintubated with a new tube. This lower airway suction is only done when the infant is NOT vigorous. • If drying and suction has not provided enough stimulation, try rubbing the infant's back or flicking their feet. If the infant still has poor respiratory effort, poor tone, or central cyanosis, consider them to be distressed, Most distressed infants will respond quickly to BVM. • Use caution not to allow newborns to slip from grasp.

APGAR SCORING

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

MEDICAL PROTOCOL
PEDIATRIC
ESOPHAGEAL FOREIGN BODY OBSTRUCTION

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MEDCONTROL	M



PEDIATRIC

ESOPHAGEAL FOREIGN BODY OBSTRUCTION

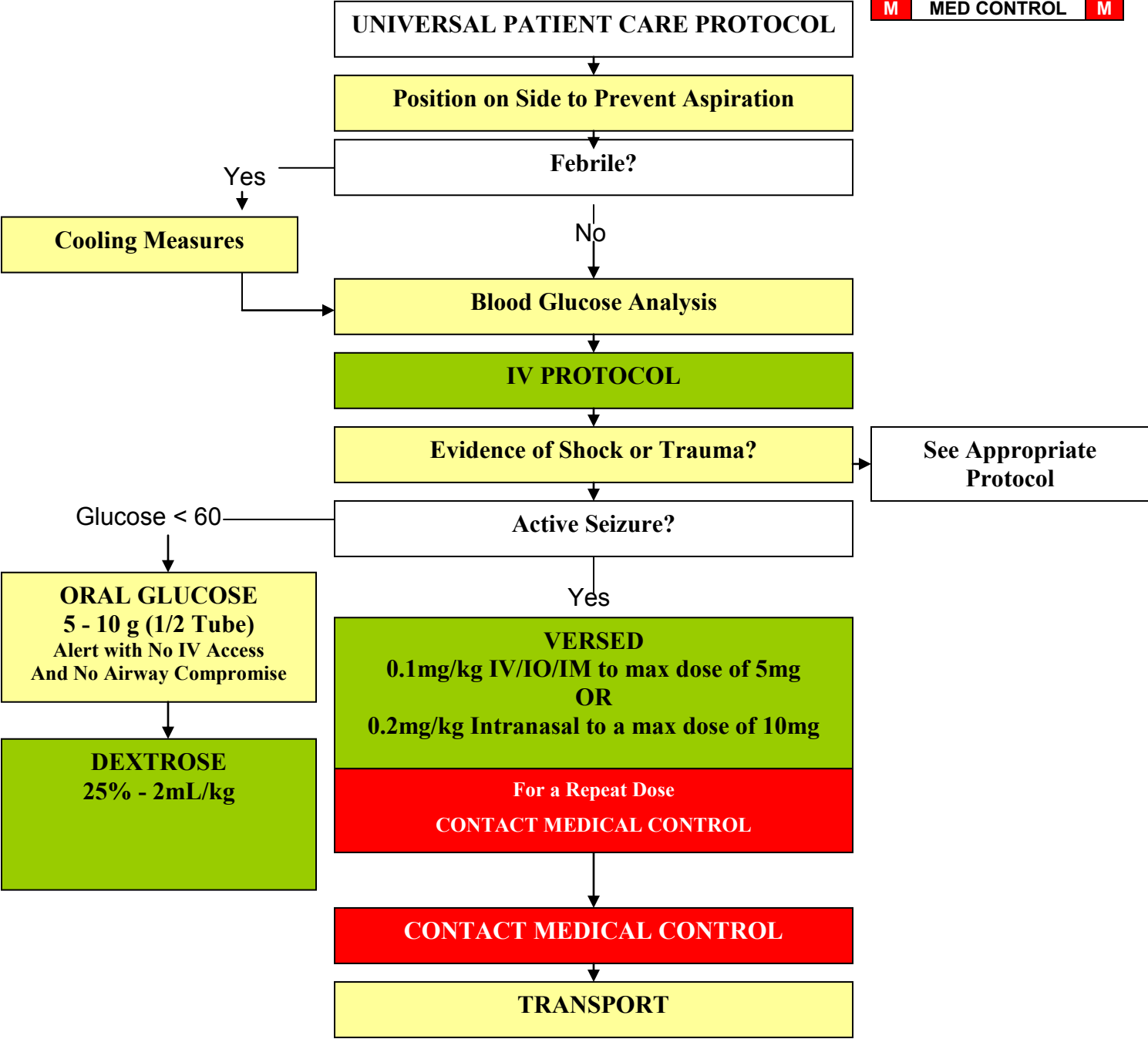
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Onset during eating or swallowing pills, etc. 	<ul style="list-style-type: none"> • Salivation • Unable to swallow secretions • Distressed patient • Able to breathe but may feel impaired 	<ul style="list-style-type: none"> • Airway obstruction

KEY POINTS

- Rule out airway obstruction first.
- Patient may be helpful in identifying location of bolus obstruction as they can feel it, point to it.
- If bolus is located in neck area, glucagon will not work, just monitor and transport.
- If bolus located from neck down, proceed with glucagon treatment.
- Treat patients <16 years with ½ mg dose of glucagon.

MEDICAL PROTOCOLS
PEDIATRIC
SEIZURE

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



PEDIATRIC

SEIZURE

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Fever • Prior history of seizures • Seizure medications • Reported seizure activity • History of recent head trauma • Congenital abnormality 	<ul style="list-style-type: none"> • Observed seizure activity • Altered mental status • Hot, dry skin or elevated body temperature 	<ul style="list-style-type: none"> • Fever • Infection • Head trauma • Medication or Toxin • Hypoxia or Respiratory failure • Hypoglycemia • Metabolic abnormality / acidosis • Tumor

Categories of Seizures

Complex – Unconscious
Simple – Conscious

Focal – Partial, Localized
Generalized – All Body

Complex Focal
Complex Generalized

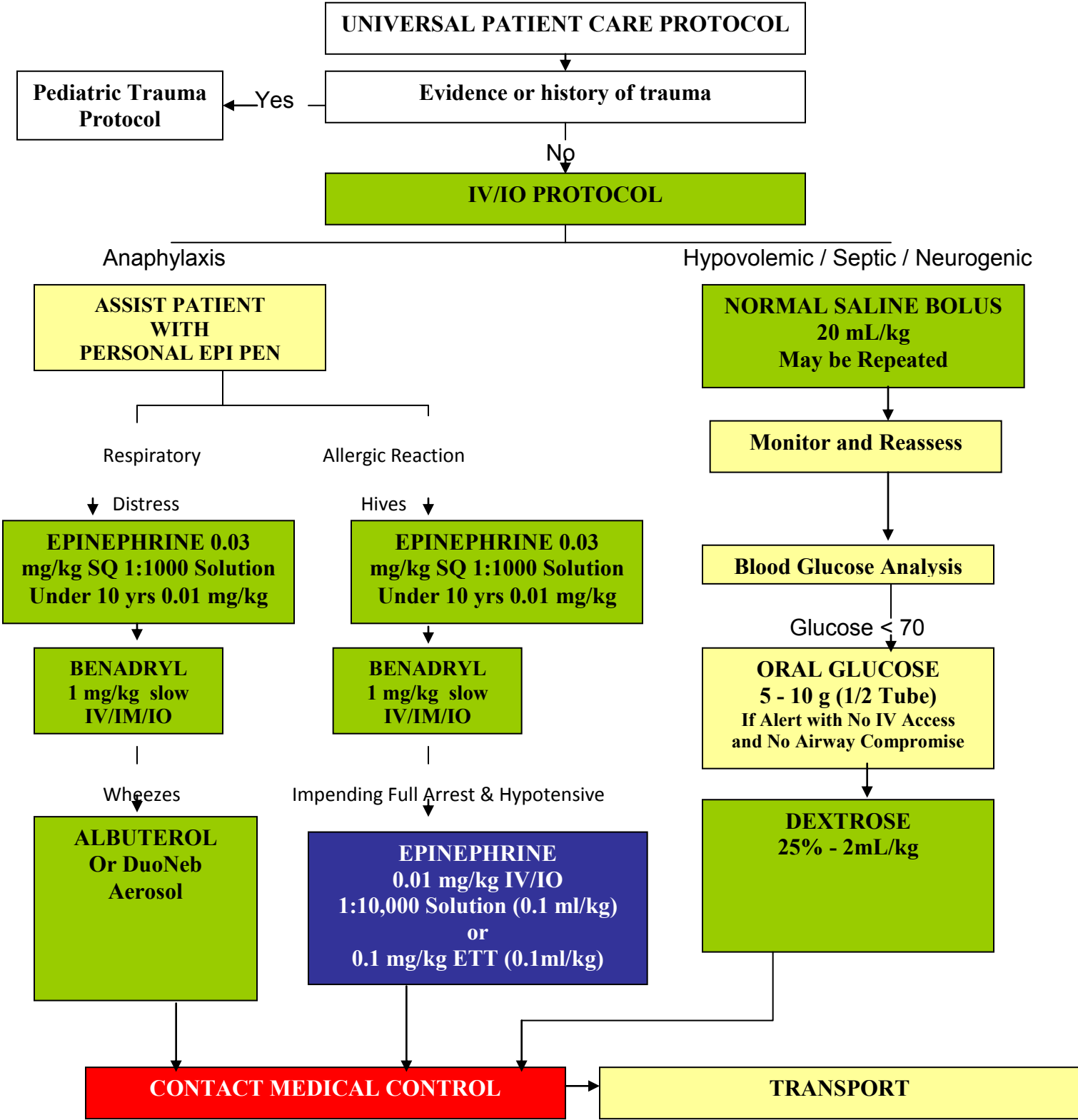
Simple Focal
Simple Generalized

KEY POINTS

- Exam: Mental Status, HEENT, Heart, Lungs, Extremities, Neuro.
- **Status Epilepticus** is defined as two or more successive seizures without a period of consciousness or recovery. This is a true emergency requiring rapid airway control, treatment, and transport.
- **Grand mal seizures** (generalized) are associated with loss of consciousness, incontinence, and tongue trauma.
- **Focal seizures (petit mal)** effect only a part of the body and are not usually associated with a loss of consciousness.
- **Jacksonian seizures** are seizures, which start as a focal seizure and become generalized.
- Be prepared to assist ventilations especially if a benzodiazepine is used.
- If evidence or suspicion of trauma, spine should be immobilized.
- If febrile, remove clothing and sponge with room temperature water.
- **In an infant, a seizure may be the only evidence of a closed head injury.**

MEDICAL PROTOCOLS
PEDIATRIC
SHOCK (NON – TRAUMATIC)

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

SHOCK (NON – TRAUMATIC)

HYPOVOLEMIC / SEPTIC / NEUROGENIC

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Blood loss • Fluid loss • Vomiting • Diarrhea • Fever • Infection 	<ul style="list-style-type: none"> • Restlessness, confusion, weakness • Dizziness • Increased HR • Decreased BP • Pale, cool, clammy skin • Delayed capillary refill 	<ul style="list-style-type: none"> • Trauma • Infection • Dehydration • Vomiting • Diarrhea • Fever • Congenital heart disease • Medication or toxin

ALLERGIC REACTION / ANAPHYLAXIS

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Onset and location • Insect sting or bite • Food allergy / exposure • Medication allergy / exposure • New clothing, soap, detergent • Past history of reactions • Past medical history • Medication history 	<ul style="list-style-type: none"> • Warm burning feeling • Itching • Rhinorrhea • Hoarseness • Stridor • Wheezing • Respiratory distress • Altered LOC / Coma • Cyanosis • Pulmonary edema • Facial / Airway edema • Urticaria / Hives • Dyspnea 	<ul style="list-style-type: none"> • Urticaria (rash only) • Anaphylaxis (systemic effect) • Shock (vascular effect) • Angioedema (drug induced) • Aspiration / Airway obstruction • Vasovagal event • Asthma

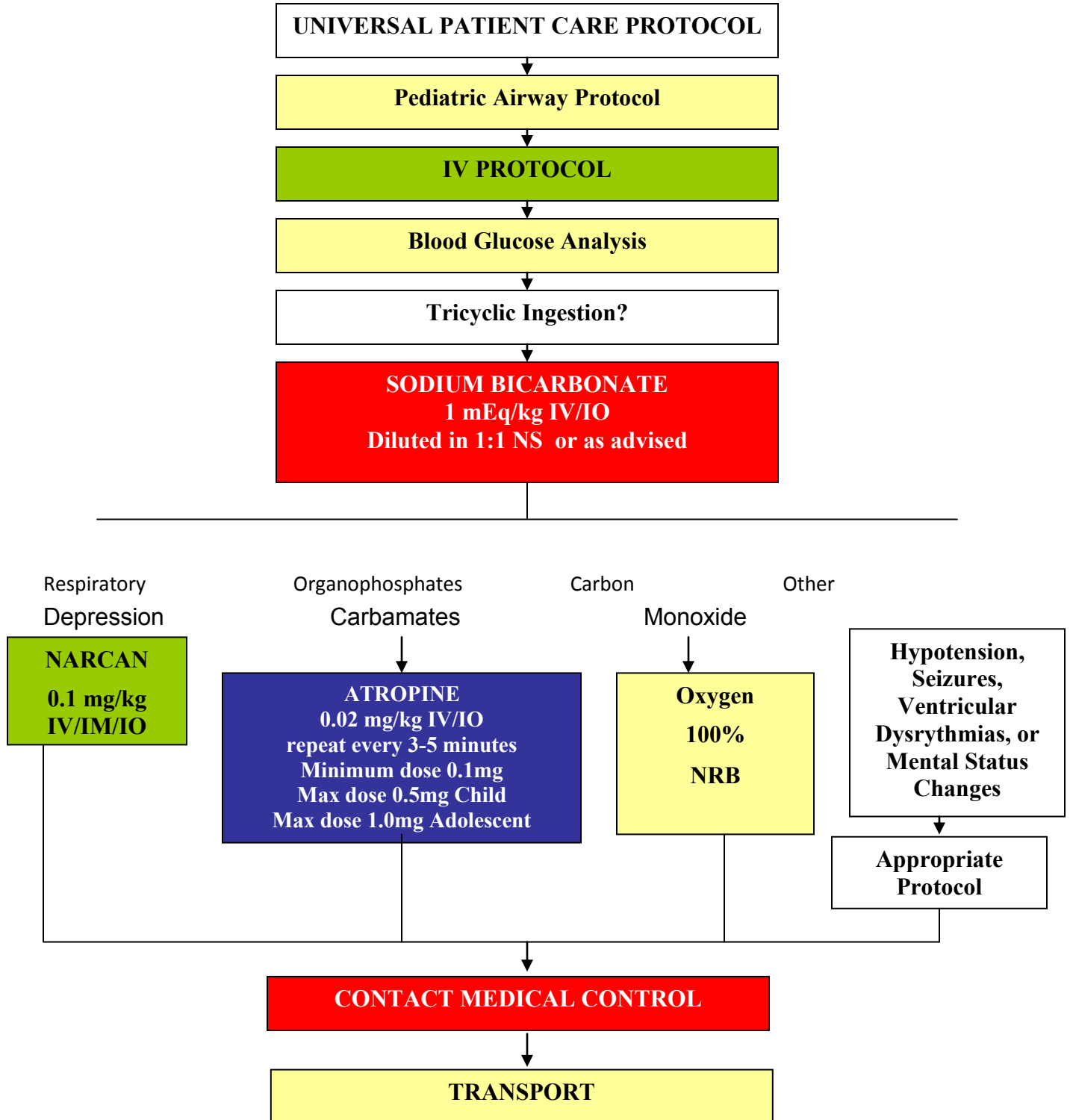
KEY POINTS

- Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro.
- Consider all possible causes of shock and treat per appropriate protocol.
- Decreasing heart rate is a sign of impending collapse.
- Be sure to use the appropriate sized BP cuff.
- Findings in the primary assessment should alert you that the patient is in shock. Pay particular attention to the patient's mental status, tachycardia, skin color, and capillary refill.
- Shock is not only caused by blood loss. The EMT must evaluate for fluid loss from other causes such as excessive vomiting and/or diarrhea, heat exposure and malnutrition.
- Do not use only the patient's blood pressure in evaluating shock; also look for lower body temperature, poor capillary refill, decreased LOC, increased heart rate and/or poor skin color or turgor
- Routinely reassess the patient and provide supportive care.
- Use caution when using Epinephrine for patients with a cardiac history.
- Use caution when using Epinephrine for patients with a heart rate greater than 120 bpm.
- Blood pressure is a late and unreliable indication of pediatric shock.

PEDIATRIC

TOXIC INGESTION / EXPOSURE / OVERDOSE

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC

TOXIC INGESTION / EXPOSURE / OVERDOSE

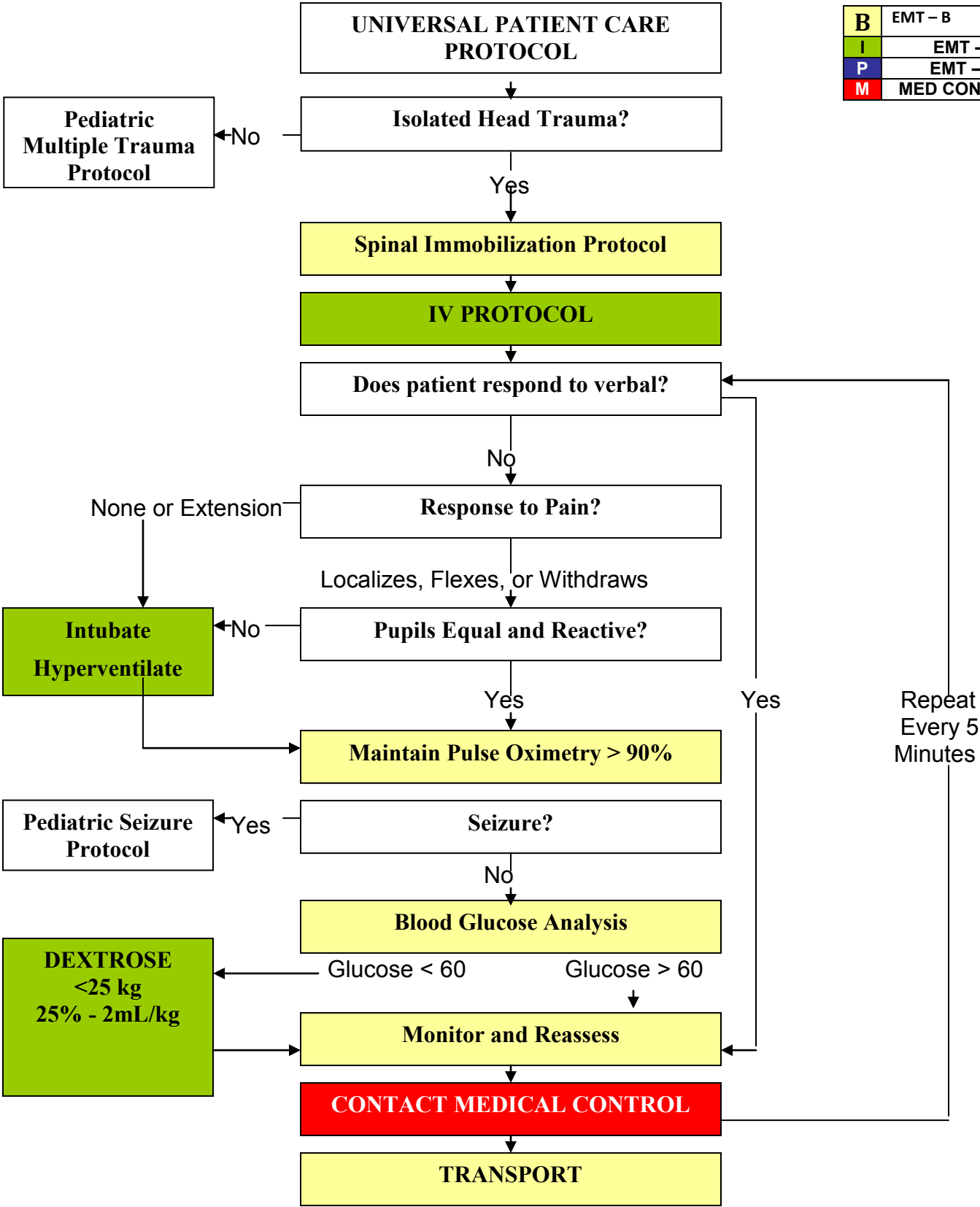
HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Ingestion or suspected ingestion of a potentially toxic substance • Substance ingested, route, quantity, dose • Time of ingestion • Reason (suicidal, accidental, criminal) • Available medications in home • Past medical history, medications 	<ul style="list-style-type: none"> • Mental status changes • Hypo / Hypertension • Decreased respiratory rate • Tachycardia, dysrhythmias • Seizures 	<ul style="list-style-type: none"> • Tricyclic antidepressants (TCAs) • Acetaminophen (Tylenol) • Aspirin • Depressants • Stimulants • Anticholinergic • Cardiac medications • Solvents, alcohols, cleaning agents • Insecticides (organophosphates) / Carbamates

KEY POINTS

- Routinely assess and document the patient's cardiopulmonary status.
- Determine what the patient was exposed to, how much, and when. If it is safe to do so, bring a sample with you to the hospital.
- Be sure to find out what interventions were administered prior to EMS arrival and document.
- If the patient ingested bleach, monitor the airway and remove contaminated clothing.
- Medical Control may order antidotes for specific ingestions.
- **DO NOT** use syrup of ipecac.
- Reference: Greater Cleveland Poison Control Center 1-800-222-1222.

TRAUMA PROTOCOLS
PEDIATRIC
HEAD TRAUMA

B	EMT - B	B
I	EMT - I	I
P	EMT - P	P
M	MED CONTROL	M



TRAUMA PROTOCOLS

PEDIATRIC

HEAD TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Time of injury • Mechanism: blunt or penetrating • Loss of consciousness • Bleeding • Past medical history • Medications • Evidence for multi-trauma • History of Vomiting 	<ul style="list-style-type: none"> • Pain, swelling, bleeding • Altered mental status • Unconscious • Respiratory distress / Failure • Vomiting • Major traumatic mechanism of injury • Seizure 	<ul style="list-style-type: none"> • Skull fracture • Brain injury (Concussion, Contusion, Hemorrhage or Laceration) • Epidural hematoma • Subdural hematoma • Subarachnoid hemorrhage • Spinal injury • Abuse

KEY POINTS

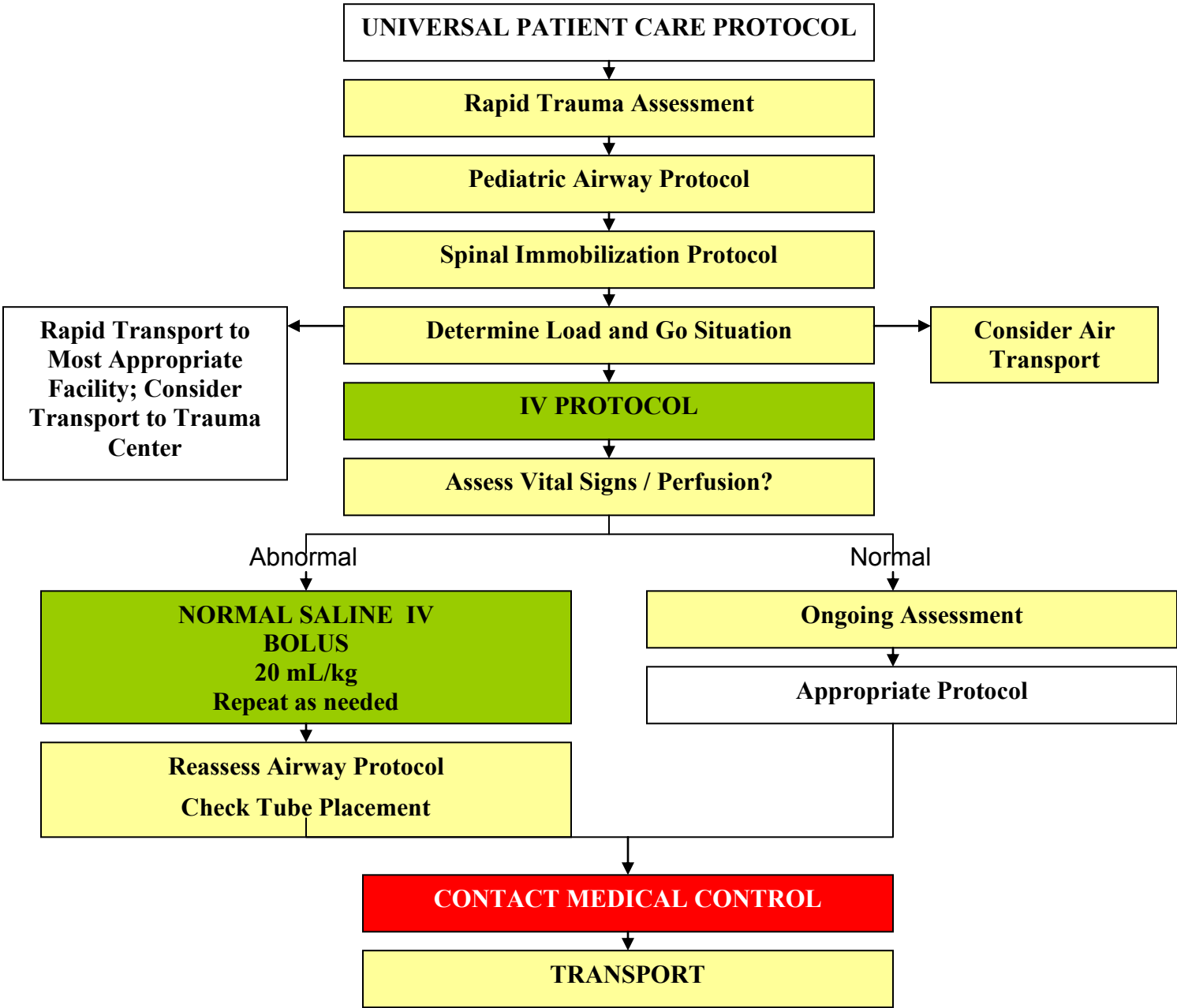
- Exam: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremities, Back, Neuro.
- If GCS < 12 consider air / rapid transport and if GCS < 8 intubation should be anticipated.
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushing's Response).
- Hypotension usually indicates injury or shock unrelated to the head injury.
- The most important item to monitor and document is a change in the level of consciousness.
- Concussions are periods of confusion or LOC associated with trauma, which may have resolved by the time EMS arrives. A physician should evaluate any prolonged confusion or mental status abnormality, which does not return to normal within 15 minutes or any documented loss of consciousness.
- Consider Zofran for nausea/vomiting. Consult with medical control.

TRAUMA PROTOCOLS

PEDIATRIC

MULTIPLE TRAUMA

B	EMT – B	B
I	EMT – I	I
P	EMT – P	P
M	MED CONTROL	M



PEDIATRIC MULTIPLE TRAUMA

HISTORY	SIGNS AND SYMPTOMS	DIFFERENTIAL DIAGNOSIS
<ul style="list-style-type: none"> • Time and mechanism of injury • Damage to structure or vehicle • Location in structure or vehicle • Others injured or dead • Speed and details of Trauma • Restraints / Protective equipment • Car seat • Helmet • Pads • Ejection • Past medical history • Medications 	<ul style="list-style-type: none"> • Pain, swelling • Deformity, lesions, bleeding • Altered mental status • Unconscious • Hypotension or shock • Arrest 	<ul style="list-style-type: none"> • Chest tension pneumothorax • Flail chest • Pericardial tamponade • Open chest wound • Hemothorax • Intra-abdominal bleeding • Pelvis / Femur fracture • Spine fracture / Cord injury • Head injury (see Head Trauma) • Extremity fracture / dislocation • Airway obstruction • Hypothermia

A Pediatric Trauma Victim is a person < 16 years of age exhibiting one or more of the following physiologic or anatomic conditions

<p>Physiologic Conditions</p> <ul style="list-style-type: none"> • Glasgow Coma Scale < 13 • Loss of consciousness > 5 minutes • Deterioration in level of consciousness at the scene or during transport • Failure to localize to pain • Evidence of poor perfusion, or evidence of respiratory distress or failure 	<p>Anatomic Conditions</p> <ul style="list-style-type: none"> • Penetrating trauma to the head, neck, or torso • Significant, penetrating trauma to extremities proximal to the knee or elbow with evidence of neurovascular compromise • Injuries to the head, neck, or torso where the following physical findings are present: <ul style="list-style-type: none"> ○ Visible crush injury ○ Abdominal tenderness, distention, or seatbelt sign ○ Pelvic fracture ○ Flail chest • Injuries to the extremities where the following physical findings are present: <ul style="list-style-type: none"> ○ Amputations proximal to the wrist or ankle ○ Visible crush injury ○ Fractures of two or more proximal long bones ○ Evidence of neurovascular compromise • Signs or symptoms of spinal cord injury • 2nd or 3rd Degree burns > 10% total BSA, or other significant burns involving the face, feet, hands, genitalia, or airway
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KEY POINTS

<ul style="list-style-type: none"> • Exam: Mental Status, Skin, HEENT, Heart, Lung, Abdomen, Extremities, Back, Neuro. • Examine all restraints / protective equipment for damage. • In prolonged extrications or serious trauma consider air transportation for transport times and the ability to give blood. • Do not overlook the possibility for child abuse. • A trauma victim is considered to be a pediatric patient if they are younger than 16 years old. • Major trauma patients are to be transported to the closest Pediatric Trauma Center when possible. • Contact the receiving hospital for all major trauma or critical patients. • The proper size equipment is very important to resuscitation care. Refer to length based drug treatment guide (e.g. Broselow Peds Tape or similar Guide) when unsure about patient weight, age and/or drug dosage and when choosing equipment size. • Cover open wounds, burns, eviscerations. • With the exception of airway control, initiate ALS enroute when transporting major trauma patients. • If unable to access patient airway and ventilate, then transport to the closest facility for airway stabilization. • The on scene time for major trauma patients should not exceed 10 minutes without documented, acceptable reason for the delay. • All major trauma patients should receive oxygen administration, an IV(s), and cardiac monitoring. • Provide a documented reason if an intervention could not be performed.
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PEDIATRIC ASSESSMENT CHARTS**PEDIATRIC****GLASGOW COMA SCALE**

EYE OPENING	Spontaneous	Spontaneous	4
	To voice	To voice	3
	To pain	To pain	2
	None	None	1
VERBAL RESPONSE	Oriented	Coos, babbles	5
	Confused	Irritable cry, inconsolable	4
	Inappropriate	Cries to pain,	3
	Garbled speech	Moans to pain	2
	None	None	1
MOTOR RESPONSE	Obeys commands	Normal movements	6
	Localizes pain	Withdraws to touch	5
	Withdraws to pain	Withdraws to pain	4
	Flexion	Flexion	3
	Extension	Extension	2
	Flaccid	Flaccid	1

PEDIATRIC ASSESSMENT CHARTS

PEDIATRIC

NORMAL VITAL SIGNS

AGE	HEART RATE	RESPIRATIONS	SYSTOLIC BLOOD PRESSURE
Preterm, 1 kg	120-160	30-60	36-58
Preterm 1 kg	120-160	30-60	42-66
Preterm 2 kg	120-160	30-60	50-72
Newborn	126-160	30-60	60-70
Up to 1 yo	100-140	30-60	70-80
1-3 yo	100-140	20-40	76-90
4-6 yo	80-120	20-30	80-100
7-9 yo	80-120	16-24	84-110
10-12 yo	60-100	16-20	90-120
13-14 yo	60-90	16-20	90-120
15 + yo	60-90	14-20	90-130

PEDIATRIC ASSESSMENT CHARTS**PEDIATRIC****APGAR SCORING**

SIGN	0	1	2
COLOR	Blue / Pale	Pink Body, Blue Extremities	Completely Pink
HEART RATE	Absent	Below 100	Above 100
IRRITABILITY (Response to Stimulation)	No Response	Grimace	Cries
MUSCLE TONE	Limp	Flexion of Extremities	Active Motion
RESPIRATORY EFFORT	Absent	Slow and Regular	Strong Cry

MEDICATIONS

ADENOSINE (*Adenocard*)

P EMT – P P

ACTIONS	Slows conduction time and can interrupt re-entrant pathways through the AV node Slows the sinus rate
INDICATIONS	Supra Ventricular Tachycardia (SVT) Consider in Regular Wide Complex Tachycardia Paroxysmal Supra Ventricular Tachycardia (PSVT) Wolf Parkinson White (WPW)
CONTRAINDICATIONS	Second or third degree AV block, sick sinus syndrome Atrial fibrillation Atrial flutter Ventricular tachycardia Hypersensitivity to Adenosine
PRECAUTIONS	It is helpful to inform the patient of likely side effects prior to medication administration
SIDE EFFECTS	Facial flushing Shortness of breath Chest pain Palpitations Brief period of sinus arrest /Transient Dysrhythmias Headache Lightheadedness Hypotension Nausea
ADULT DOSAGE	<u>Initial Dose</u> 6 mg rapid IVP (over 1-3 sec) immediately followed with a 20 mL saline flush <u>Repeat Dose</u> If no response is observed after 1 min., administer 12 mg rapid IVP (over 1-3 sec) immediately followed with a 20 mL saline flush. Max dose 30 mg
PEDIATRIC DOSAGE	<u>Initial Dose</u> 0.1 mg/kg rapid IVP followed with a 10 mL saline flush <u>Repeat Dose</u> If no response is observed after 1-2 min., administer 0.2 mg/kg rapid IVP followed with a 10 mL saline flush. Max dose 0.5 mg/kg up to 6mg
KEY POINTS	<ul style="list-style-type: none"> • Adenosine has a short half life, and should be administered rapidly followed by a rapid IV/IO flush • Reassess after each medication administration, refer to the appropriate protocol and treat accordingly. • Perform a 12 Lead EKG prior to the administration of Adenosine and after the rhythm converts • Record rhythm during and post administration

MEDICATIONS
ALBUTEROL (Proventil / Ventolin)

I	EMT – I	I
P	EMT – P	P

<i>ACTIONS</i>	Acts directly on beta 2 adrenergic receptors to relax bronchial smooth muscle, resulting in reduced airway resistance and relief of bronchospasm
INDICATIONS	Shortness of breath caused by bronchoconstriction
CONTRAINDICATIONS	Known hypersensitivity
PRECAUTIONS	Use precaution when administering to pregnant women or patients with cardiac history
SIDE EFFECTS	Nervousness Weakness Tremor Tachycardia
ADULT DOSAGE	2.5 mg in 3 mL via unit dose nebulizer and 6 lpm oxygen
PEDIATRIC DOSAGE	2.5 mg in 3 mL via unit dose nebulizer and 6 lpm oxygen
KEY POINTS	<ul style="list-style-type: none"> • May repeat treatment if partial relief is obtained

MEDICATIONS

AMIODARONE (Cordarone)

P EMT – P P

<i>ACTIONS</i>	Prolongs the refractory period and action potential duration
INDICATIONS	Ventricular Fibrillation (refractory to shock treatment) Pulseless Ventricular Tachycardia (refractory to shock treatment) Polymorphic VT and wide complex tachycardia
CONTRAINDICATIONS	Hypersensitivity (including iodine) Cardiogenic shock Second and Third degree AV block Severe sinus bradycardia Severe sinus node dysfunction
PRECAUTIONS	
SIDE EFFECTS	Tremors, Paresthesia, Ataxia Headache, Fatigue Abdominal pain, Nausea/Vomiting, Hepatic failure Arrhythmia, Bradycardia, Sinus arrest, Heart block (Prolonged QT), Heart failure Acute Respiratory Distress Syndrome, Severe pulmonary edema Blue-Gray skin
ADULT DOSAGE	<u>Ventricular Fibrillation and Pulseless Ventricular Tachycardia</u> 300 mg IV/IO bolus Repeat Dose: 150 mg IV/IO in 3-5 minutes, Max 2.2 g IV/24hrs <u>Wide Complex Tachycardia</u> 150 mg IV/IO over 10 minutes (15 mg/min) Repeat Dose: 150 mg IV/IO every 10 minutes prn, Max 2.2 g IV/24hrs
PEDIATRIC DOSAGE	<u>Ventricular Fibrillation and Pulseless Ventricular Tachycardia</u> 5 mg/kg IV/IO bolus <u>Ventricular Arrhythmias</u> Loading dose – 5 mg/kg IV/IO over 30-60 mins
KEY POINTS	<ul style="list-style-type: none"> • Avoid excessive movement and shaking of the medication

MEDICATIONS

ATROPINE SULFATE

P

EMT – P

P

ACTIONS	<p>Increases sinus node firing Increases conduction through the AV node by blocking vagal activity Increases cardiac output Decreases ectopic beats or fibrillation of the ventricles</p>
INDICATIONS	<p>Symptomatic sinus bradycardia Organophosphate poisoning/Nerve agent exposure</p>
CONTRAINDICATIONS	<p>Known hypersensitivity Atrial flutter/fibrillation where there is a rapid ventricular response Glaucoma – narrow angle 2nd and 3rd degree AV Block with wide QRS complex</p>
PRECAUTIONS	<p>Use with extreme caution in myocardial infarction May increase myocardial oxygen demand May trigger tachy-dysrhythmias Patient needs to be warned about side effects Doses smaller than 0.5 mg or administered too slowly may slow rather than speed up the heart rate Excessive doses in adults may precipitate ventricular tachycardia or fibrillation</p>
SIDE EFFECTS	<p>Dry mouth, thirst, urinary retention Blurred vision, pupillary dilation, headache Flushed skin Tachycardia</p>
SUPPLIED	<p>Prefilled syringes containing 1 mg in 10 mL Auto-Injector containing 2 mg (nerve agent exposure only)</p>
ADULT DOSAGE	<p><u>Bradycardia</u> 0.5 mg IV/IO (1.0 mg ETT) every 5 minutes Max dose 0.04 mg/kg or 3 mg <u>Organophosphate Poisoning</u> 2 – 5mg IVP, IM, or IO every 5 min</p>
PEDIATRIC DOSAGE	<p><u>Bradycardia</u> 0.02 mg/kg IV/IO, repeated X 1, 5 minutes (minimum dose 0.1 mg), Max single dose 0.5 mg CHILD / 1.0 mg ADOLESCENT, Max total dose 1.0 mg CHILD / 2.0 mg ADOLESCENT <u>Organophosphate Poisoning</u> 0.5 mg/kg IV/IO, repeat every 3-5 minutes</p>

MEDICATIONS**BiCarbonate (Sodium BiCarbonate)****P** EMT – P **P**

<i>ACTIONS</i>	Buffers metabolic acidosis Enhances the urinary excretion of tricyclics
INDICATIONS	Metabolic Acidosis from cardiac arrest (10 minutes down time) Tricyclic Overdose Hyperkalemia
CONTRAINDICATIONS	Heart Failure Seizures
SIDE EFFECTS	Tissue necrosis if infiltration Can precipitate with Calcium
ADULT DOSAGE	50mEq IVP for tricyclic overdose 50mEq or 1mEq/kg IVP for cardiac arrest – asystole or PEA 50 mEq IVP for cardiac arrest with prolonged down time(10 minutes)

MEDICATIONS
DEXTROSE 50 % (D50)

I	EMT – I	I
P	EMT – P	P

<i>ACTIONS</i>	Restores circulating blood sugar
INDICATIONS	Hypoglycemia Altered mental status of unknown origin Coma of unknown origin Seizures of unknown origin
CONTRAINDICATIONS	Known hyperglycemia. Head trauma – unless confirmed hypoglycemia Caution with chronic renal failure Intracranial hemorrhage
PRECAUTIONS	Use with caution for stroke patients Use a large vein to administer D50
SIDE EFFECTS	Extravasation of D50 may cause necrosis Hyperglycemia May precipitate severe neurologic symptoms in alcoholics
ADULT DOSAGE	<u>Dextrose 50% (D50)</u> 25 g IV/IO
PEDIATRIC DOSAGE	2 mL/kg D25 IV/IO

MEDICATIONS

DIPHENHYDRAMINE HCL (*Benadryl*)

I	EMT – I	I
P	EMT – P	P

ACTIONS	Antihistamine Sedative Inhibits motion sickness (antiemetic)
INDICATIONS	Anaphylactic shock and severe allergic reaction Acute dystonia Nausea/vomiting (contact Medical Control) Extrapyramidal reaction (Parkinson-like movement disorders)
CONTRAINDICATIONS	Known hypersensitivity / Allergy Pregnancy or lactating
PRECAUTIONS	Avoid the use of Diphenhydramine in nursing mothers May induce vomiting Carefully monitor patient while awaiting for medication to take effect (effect of medication begins 15 minutes after administration)
SIDE EFFECTS	Drowsiness, confusion Blurring of vision Dry mouth Wheezing; thickening of bronchial secretions Hypotension
ADULT DOSAGE	<u>Allergic Reaction or Anaphylaxis</u> 25-50 mg IV/IO/IM
PEDIATRIC DOSAGE	<u>Allergic Reaction or Anaphylaxis</u> 1 mg/kg (without hypotension) IV/IO/IM

MEDICATIONS
DuoNeb

I	EMT – I	I
P	EMT – P	P

ACTIONS	<p>(Albuterol) Parasympatholytic bronchodilator Dries respiratory tract secretions</p> <p>(Ipratropium – Atrovent) B₂ selective bronchodilator Increases HR</p>
INDICATIONS	<p>Asthma exacerbation COPD exacerbation Patients that have used their prescribed inhaler more than once Pulmonary edema with wheezing</p>
CONTRAINDICATIONS	<p>Known hypersensitivity /Allergy Allergy to peanuts Acute myocardial infarction Arrhythmias</p>
PRECAUTIONS	<p>Cardiovascular disease Hypertension history CHF</p>
SIDE EFFECTS	<p>Palpitations Anxiety Nausea Dizziness</p>
ADULT DOSAGE	Unit dose inhaled via nebulizer. May repeat as needed

MEDICATIONS								
EPINEPHRINE (<i>Adrenaline</i>)								
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I	EMT – I	I						
P	EMT – P	P						
ACTIONS	Alpha and Beta adrenergic agonist Bronchodilation Increases heart rate and automaticity Increases cardiac contractility Increases myocardial electrical activity Increases systemic vascular resistance Increases blood pressure							
INDICATIONS	Cardiac arrest Allergic reaction/Anaphylaxis Respiratory distress Acute Asthma Pediatric Bradycardia							
CONTRAINDICATIONS	Hypersensitivity Tachycardia Hypertension Hypothyroidism Angina / Chest pain Coronary artery disease							
PRECAUTIONS	Pregnancy Blood pressure, pulse, and EKG must be routinely monitored							
SIDE EFFECTS	Palpitations, ectopic beats, tachycardia Anxiety / Tremors Hypertension VF / VT Angina							
ADULT DOSAGE	<p><u>Asthma and Anaphylaxis</u> Mild Reaction (1-1,000) 0.3-0.5mg SQ Consider 1:1000 2mg mixed with 1ml NS in nebulizer for Asthma</p> <p><u>Severe Anaphylaxis</u> (1:10,000) 0.5 mg slow IV/IO over 5 minutes - EMT-P Only</p> <p><u>Cardiac Arrest</u> 1:10,000 1 mg IV/IO every 3-5 minutes – EMT-P Only</p>							
PEDIATRIC DOSAGE	<p><u>Asthma and Anaphylaxis</u> Mild Reaction Ages 10-16 yrs (1:1,000) 0.03 mg/kg SQ Under 10 yrs (1:1,000) 0.01mg/kg SQ May use 1:1000 2mg mixed with 1ml NS in nebulizer aerosolized</p> <p><u>Severe Anaphylaxis Pending Arrest</u> Ages 10-16 yrs (1:10,000) 0.01mg/kg IV/IO over 5 minutes – EMT-P Only</p> <p><u>Cardiac Arrest</u> 1:10,000 0.01 mg/kg IV/IO push 0.1ml/kg – EMT-P Only or 0.1 mg/kg 1:1000 ETT 0.1ml/kg – EMT-P Only</p>							
KEY POINTS	Administer SQ dose prior to contacting Medical Direction. IV dose in non-cardiac patient consult Medical Direction							

MEDICATIONS**GLUCAGON**

I	EMT – I	I
P	EMT – P	P

ACTIONS	Accelerates the breakdown of glycogen to glucose in the liver, causing an increase in blood glucose level Relaxes smooth muscle of GI tract
INDICATIONS	Hypoglycemia when IV/IO is not able to be established and oral glucose is contraindicated Esophageal obstruction Beta Blocker overdose
CONTRAINDICATIONS	Known hypersensitivity Pheochromocytoma
PRECAUTIONS	Glucagon is only effective in patients with sufficient stores of glycogen Use caution in patients with renal or cardiovascular disease Glucagon can be administered on scene, but do not wait for it to take effect
SIDE EFFECTS	Nausea/Vomiting
ADULT DOSAGE	1mg IM for Hypoglycemia 2mg IV/IO/IM in esophageal foreign body obstruction 2 – 4mg IV/IO for hypotension / bradycardia in Betablocker overdose and Calcium Channel overdose
PEDIATRIC DOSAGE	<20kg give 0.5mg/kg IM >20kg give 1mg IM
KEY POINTS	Response is usually noticed in 5-20 minutes Glucagon is NOT a substitute for D25, or D12.5. IV must be attempted prior to administering Glucagon

MEDICATIONS
NALOXONE (<i>Narcan</i>)

I	EMT – I	I
P	EMT – P	P

<i>ACTIONS</i>	Reverses all effects from opioid agents such as respiratory depression and all central and peripheral nervous system effects
INDICATIONS	Narcotics overdoses Altered mental status of unknown origin
CONTRAINDICATIONS	Nonee
SIDE EFFECTS	Withdrawal syndrome in addiction Ventricular dysrhythmias Cerbral edema
ADULT DOSAGE	0.4 - 2 mg IV/IO, IM, SQ, or intranasal. Administer in small doses. May repeat the initial dose if the patient becomes symptomatic again
PEDIATRIC DOSAGE	0.1 mg/kg IV/IO, IM, SQ, or intranasal. May be repeated at 0.1 mg/kg
KEY POINTS	

MEDICATIONS
VERSED (Midazolam)

I	EMT – I	I
P	EMT – P	P

ACTION	Sedative and hypnotic benzodiazepine Induces amnesia
INDICATIONS	Conscious sedation Seizure Facilitate intubation Facilitate pacing / cardioversion
CONTRAINDICATIONS	Intolerance to benzodiazepines Narrow-angle glaucoma Shock Coma
SIDE EFFECTS	<p>CNS – amnesia, headache, dizziness, euphoria, confusion, agitation, anxiety, delirium, drowsiness, muscle tremor, ataxia, dysphoria, slurred speech, and paresthesia.</p> <p>Cardiovascular – hypotension, PVC’s, tachycardia, vasocagel episode</p> <p>Eye – blurred vision, diplopia, nystagmus, pinpoint pupils</p> <p>Respiratory – coughing, bronchospasms, laryngospasm, apnea, hypoventilation, wheezing, airway, obstruction, tachypnea</p> <p>Skin – swelling, burning, pain at the site of injection</p>
ADULT DOSAGE	2mg IV/IO max initial dose for sedation (may repeat as necessary) 5mg IV/IO max initial dose for seizures (may repeat as necessary) 5mg IV/IO for RSI and Violent Patients Versed may be administered IM or nasally in actively seizing or violent patients whenever IV access is not achieved.
PEDIATRIC DOSAGE	Seizures – 0.1mg/kg IV/IO/IM to a max dose of 5mg 0.2mg/kg Intranasal to a max dose of 10mg